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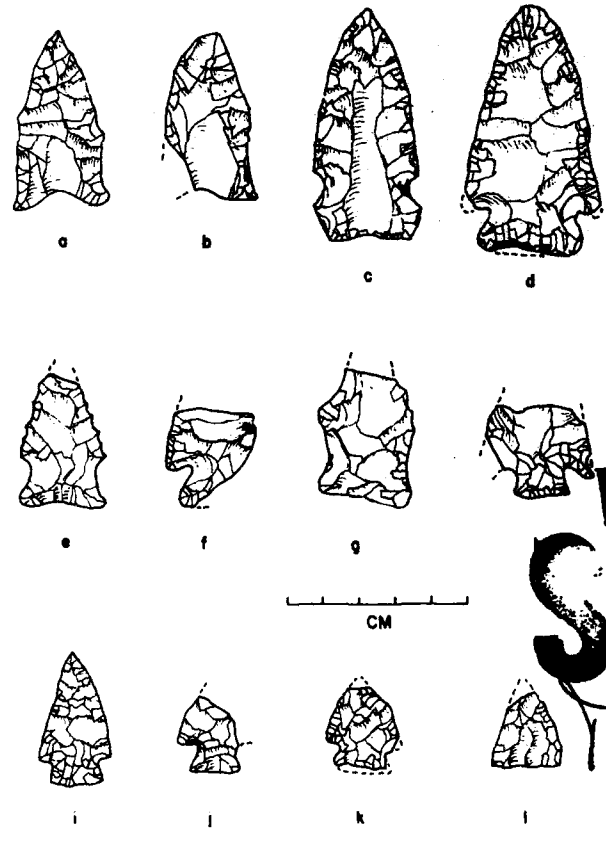
Mitigation of Adverse Effects of Long Branch Lake Project upon the Archaeological Resources Part 4



By Larry Grantham

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The report contains the findings of an archeological investigation conducted at the Long Branch Lake project, located in the Chariton River Valley, in northeastern Missouri. Documentation is provided for 7,000 years of continuous occupation of the river valley from the Middle Archaic to the Historic periods. Subsistence, settlement, and trade patterns are discussed.

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LONG BRANCH LAKE ARCHAEOLOGICAL RESOURCES

MITIGATION OF ADVERSE EFFECTS OF LONG BRANCH LAKE PROJECT UPON THE ARCHAEOLOGICAL RESOURCES

FINAL

by
Larry Grantham

AN ARCHAEOLOGICAL PROJECT CONDUCTED FOR

U.S. ARMY CORPS OF ENGINEERS

KANSAS CITY DISTRICT

by
NORTHEAST MISSOURI STATE UNIVERSITY
KIRKSVILLE, MISSOURI

DACW41-78-C-0103

1986

Part 4

Funds for this investigation and report were provided by the U.S. Army Corps of Engineers. The Corps may not necessarily agree with the contents of this report in its entirety. The report reflects the professional views of the contractor who is responsible for collection of the data, analysis, conclusions and recommendations.

PART 4

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23MC321

This site is located on the left (northeast) bank of the East Fork. The site lies on a high hill bounded by a short, shallow wash to the southeast and by a broad, deep draw to the northwest. Hill slopes are gentle to the southeast; moderate to the northwest; and steep to the southwest where the river has truncated that slope. The site area was originally included with 23MC148, but after the site was cleared it was noted that material distribution did not appear to be continuous. On that basis, a separate site number was assigned to the area. The river originally flowed approximately 90 feet to the south of the site. The size of the site is estimated to be 400 feet northeast-southwest by 200 northwest-southeast. The elevation of the site is approximately 775-788 feet m.s.l. Vegetation originally consisted of oak-hickory forest, and visibility was poor. Material was collected after the site had been cleared, and material density was moderate. The site appeared to be in an excellent state of preservation.

This site lies along the southern edge of a large area which developed under prairie conditions. As other sites in the area were slated for excavation (23MC55, 74, and 149), large excavations on this site were not considered necessary. We did, however, wish to obtain a sample of materials from the site as it was anticipated that wave action on this side of the reservoir would cause damage to the site. although a limited area would be excavated on the site, we hoped to gain some information on chronological placement and site function.

Four, one and one-half meter squares were laid out for excavation. Two squares were in the northwest part of the site, one was in the northeast part of the site, and one near the southern edge (Figure 172). The area of the excavations had been cleared of trees but was relatively undisturbed. It was therefore decided to excavate the squares in arbitrary ten centimeter levels. Squares were excavated to a depth which was relatively culturally sterile. A total of three, ten centimeter levels were excavated in the northwestern squares, two ten centimeter levels were excavated in the northeastern square, and four ten centimeter levels were excavated in southern square. The northern three squares reached a culturally sterile zone from eighteen to twenty-five centimeters below the surface. The southern square did not reach culturally sterile deposits. The soil was becoming rapidly more difficult to excavate, and cultural material density had fallen off dramatically.

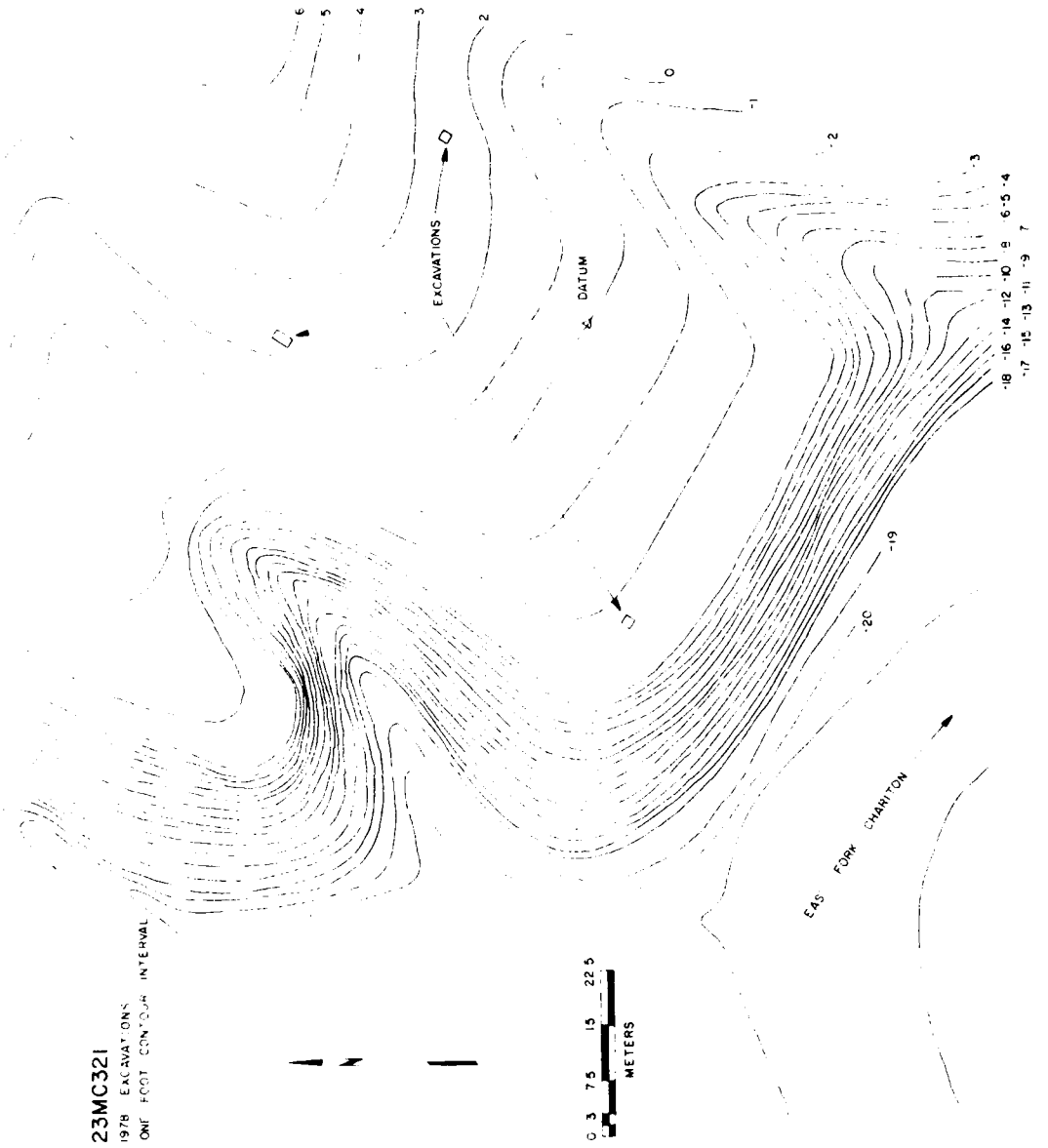

Figure 172. 23MC321. Site map and location of excavations.

No cultural stratigraphy with clear horizons was noted in the excavations, although deposits were deep enough in places that relative cultural stratigraphy may be discernible. Deposits were fairly uniform throughout. The only physical stratigraphy was the result of soil horizonation. An A1-horizon extended from the surface to a depth of seven to twelve centimeters below the surface. A B1-horizon extended from the lower A1-horizon to eighteen centimeters below the surface in the northeastern square to as deep as 37 centimeters below the surface in the southern square. A B2-horizon extended for an undetermined depth below that point.

Description of Materials

Points

Group 25:a-b Straight-based, Expanding-stemmed Points - 2 proximal fragments (Figure 173, a-b)

It is difficult to say much about the original morphology of these points due to the fracture patterns. They exhibit straight bases, rounded stem-base junctures, long expanding stems and bi-convex cross-sections. The specimens were probably originally corner-notched. The specimens are fragments of relatively large points. The specimens exhibits primary percussion and secondary pressure flaking. Primary flake scars are generally large, lamellar, uneven in size, and inconsistent in distribution. Secondary pressure flaking is not abundant. Flake scars are small, lamellar, fairly even in size, and consistent in distribution. Specimen 25:b exhibits heavy basal grinding as well as heavy grinding along the stem margin. It exhibits a transverse stress fracture and a compound oblique fracture. Specimen 25:a lacks basal grinding and exhibts a transverse stress fracture across the notches.

Group 47:a Distal Projectile Point Fragment - 1

It is impossible to determine the original size of the point, but, based on thickness, it would not appear to have been a large point. The chipping pattern on the remaining portion is pressure flaking only. The specimen exhibits a transverse stress fracture.

Group 48:a Medial Projectile Point Segment - 1

The specimen in this category lacks both proximal and distal ends. The specimen appears to have been relatively large in size. It exhibits largely primary percussion

flaking with only slight secondary pressure flaking to even up the edges. Lateral margins are still slightly sinuous. The specimen exhibits a distal oblique stress fracture. The proximal end exhibits two intersecting oblique fractures compounded by a large percussion fracture.

Drill-like Implements

Group 54:a Narrow, Drill-like Implement - 1 medial fragment

Little can be said of the specimen in this category. It exhibits the narrow diamond-shaped cross-section typical of drills and the medial flake scar ridges on both faces. The specimen is far too small to make any other statements regarding morphology or wear.

Bifaces and Biface Fragments

Group 72:a Distal Fragment - Thin, Broad Biface with Convex Distal End - 1 (Figure 173, c)

The specimen in this category exhibits two lateral margins converging toward a point with a rounded distal end. The chipping pattern consists of primary percussion and secondary pressure flaking. Primary flake scars are present on one face only. Edges are carefully trimmed, and a completed tool fragment is represented. The specimen exhibits a transverse stress fracture.

Group 75:a-d Miscellaneous Thin Biface Fragments - 4

The specimens included in this category have little in common except for the presence of bifacial flaking. They exhibit no external criteria which would allow their inclusion in any other category. Specimen 75:a is a small fragment with secondary pressure flaking. It exhibits careful edge trimming and is a fragment of a completed tool. Specimens 75:b, 75:c, and 75:d exhibit primary percussion flaking. Specimens lack edge trimming and appear to have fractured during the flaking process. Specimen 75:a exhibits a transverse and an oblique stress fracture. Specimen 75:b exhibits a transverse stress fracture. Specimen 75:c exhibits two transverse stress fractures and a longitudinal compound fracture. Specimen 75:d exhibits a transverse stress fracture and multiple compound fractures complicated by percussion fractures.

Cores

Group 77:a-c Polyhedral Cores - 3

This category includes chert and quartzite nodules from which flakes have been driven in a highly irregular fashion. Only specimen 77:a is chert while the other two specimens are quartzite. Only specimen 77:a still retains cortex. Flakes were struck off with considerable force. Specimen 77:a is glacial chert, while specimens 77:b and 77:c are metaquartzite which occurs as a very minor component in the local Flint Hill sandstone.

Group 78:a Core Fragment - 1

The specimen included in this category exhibits all of the external criteria of a core except that one face representing a heavy percussion fracture is present. The type of core cannot adequately be determined. Flakes have been removed by heavy percussion. The specimen lacks cortex or fracture planes.

Miscellaneous Worked Chert

Group 83:a Miscellaneous Worked Chert - 1

The specimen in this category exhibits bifacial working but lacks any discernible pattern in flaking. The specimen is slightly blocky and irregular in shape. It exhibits secondary cortical surfaces, but these are along fracture planes.

Flake Tools

Group 86:a Utilized Flake - 1

The specimen in this category exhibits alteration of the lateral margins through utilization after the original flake removal. This specimen is a flake fragment with only one of the original flake margins left intact. This margin exhibits heavy utilization. Utilization is bifacial, and it was utilized in a cutting motion. Edge damage consists of heavy crushing, and it would appear to have been with considerable force. The utilized edge is acute.

Ground/Pecked Stone

Group 94:a Pecked and Battered Stone - 1 (Figure 173, e)

The specimen in this category exhibits one face with pecking and two ends and one edge with battering. The pecking on one face is roughly centered on the face. The

peck marks are not readily discernible. The degree of force was relatively heavy. Battering is present on both ends and one edge. Battering was not done with considerable force. Individual peck marks are not readily apparent, although the battered areas are highly roughened. Edge damage consists mainly edge crushing. Edge shattering is absent.

Group 96:a Ground, Pecked, and Battered Stone - 1 (Figure 173, f)

The specimen in this category exhibits two ground faces, one pecked face, and continuous battering around the circumference of the stone. Pecking is present on one face. Individual peck marks are apparent. Peck marks indicate that the degree of force was probably heavy. Peck marks are roughly centered on the face. Grinding is readily apparent on both faces. Grinding has completely removed all cortex from the faces. Striations are not apparent, but polish is present on both surfaces. Battering is readily apparent around the entire circumference of the cobble. Battering was performed with considerable force. Batter marks exhibit the crumbling effect noted on direct contact with dense materials. Edge crushing is the main edge damage, although edge shattering is apparent on both ends. In addition, edges and one end exhibit moderate edge rounding. Only small areas of cortex are visible near the two edges.

Group 111:a Ground Stone/Utilized Fire-cracked Rock - 1 fragment (Figure 173, d)

Little can be said of the specimen in this category. It consists of a small spall off an argillite cobble. One face of the spall has been heavily ground. Cortex removal is present, as cortex is present in greater amounts toward one edge. Light striations are present, but it cannot be determined if these are glacial or cultural. Polish is absent. One edge of the spall has been utilized in a cutting motion after fracture as light bifacial flake removal and slight edge rounding are apparent. It is not possible to determine if grinding was the sole alteration prior to fracture.

Hematite

Group 118:a-e Ground Hematite - 5 (Figure 173, g-j)

All specimens are specular hematite. All five specimens appear to be fire-cracked portions of a single specimen. Striations are coarse and multi-directional on the remaining face; fine and unidirectional on the remaining edge. The specimen was ground for pigment as there are no edges indicative of a tool.

Group 119:a-b Hematite Flakes - 2

Two hematite flakes were recovered from the excavations. They exhibit the criteria of percussion flakes including bulbs of percussion and eraillures.

Ceramics

Pottery - 22

Group 128:

Ceramics Three: Sand and grit tempered, cordmarked bodies

Sample: 3 cordmarked body sherds and 19 highly eroded body sherds.

Paste:

Temper: Temper is a combination of sand and grit. Sand particles are highly rounded small particles (.1 to .8 mm). Larger particles are grit (apparently crushed granite). Particles are not highly rounded and are relatively large (2 to 5 mm).

Texture: Sherds are very friable. Lamination appears roughly parallel to the interior-exterior surfaces. Sherds break irregularly. Temper constitutes 20-40 percent of the sherd volume.

Color: Color is not highly variable and a single vessel appears to be represented. Exterior color is yellow (7.5YR7/8), and interior color is very dark gray (2.5YR3/0).

Method of Manufacture: The probability is high that vessels were lump modeled as there are no sherds with straight breaks indicative of coiling. In addition, finger marks on interiors are abundant.

Surface Finish: Three sherds with non-eroded exteriors exhibit cordmarks indicative of the use of a cordwrapped paddle.

Decoration: Undetermined.

Form: Undetermined.

Group 133:a-d Burned Clay - 4

The specimens in this category are clay which has been fired intentionally or unintentionally. They differ from pottery only in that they lack temper. All specimens are eroded and highly irregular in shape.

Lithic Waste

Group 134 Chert Waste - 450

A total of 263 unmodified chert flakes and 85 pieces of unmodified chert shatter were recovered from the excavations. Surface material included 91 unmodified chert flakes and 11 pieces of unmodified chert shatter.

Group 135 Quartzite Waste - 8

A total of six unmodified quartzite flakes and one piece of unmodified quartzite shatter were recovered from the excavations. Surface material included a single unmodified quartzite flake.

Group 136 Quartz Waste - 1

A single unmodified quartz flake was recovered from the excavations.

Group 141: Fire-cracked Rock - 2,659

Fire-cracked is the term utilized for thermally altered stone. A total of 2,524 pieces were recovered from the excavations, and 135 pieces were recovered from the surface.

Group 142: Unmodified Stone - 261

The specimens in this category consist of unmodified glacial and local materials. They exhibit no intentional or unintentional cultural modifications. These appear to include largely residual materials which appear to have been unintentionally transported to the site.

Historic

Group 144:a-g Miscellaneous Historic Material - 7

A total of seven pieces of historic material were recovered from the excavations. Five fragments of brick and two small fragments of unidentificable iron were recovered.

TABLE 92

Artifact Measurements and Attributes - 23MC?21

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Points						
Straight-based, Expanding-stemmed Points						
25.a	208	11*	28*	4*	1g*	proximal fragment
25.b	Sur.	21*	18*	8*	3g*	proximal fragment
Drill-like Implement						
Narrow Drill-like Implement						
54.a	102	8*	11*	7*	1g*	medial fragment
Bifaces and Biface Fragments						
Distal Fragment - Thin, Broad Biface with Convex Distal End						
72.a	105	24*	31*	8*	5g*	distal fragment
Cores						
Polyhedral Cores						
77.a	107	82	74	57	271g	
77.b	Sur.	78	56	44	143g	
77.c	Sur.	63	59	46	168g	
Miscellaneous Worked Chert						
Miscellaneous Worked Chert						
83.a	Sur.	35*	32	10	15g*	
Flake Tools						
Utilized Flake						
86.a	206	21*	19*	7*	3g*	1 utilized edge
Ground/Pecked Stone						
Pecked and Battered Stone						
94.a	Sur.	116	75	48	587g	Quartzite 1p, 3b
Ground, Pecked and Battered Stone						
96.a	Sur.	105	91	52	757g	Argillite 1p, 2g, Cb
Ground Stone/Utilized Fire-cracked Rock						
111.a	204	22*	17*	4*	1g*	Argillite 1g, 1 util
Hematite						
Ground Hematite						
118.a	203	21	9	5	2g	2 facets
118.b	205	18	13	3	1g	1 facet
118.c	205	15	11	3	1g	1 facet
118.d	205	8	4	1	1g	1 facet
118.e	207	12	10	4	1g	2 facets
Hematite Flakes						
119.a	204	12	7	4	1g	
119.b	106	6	1	2	1g	

TABLE 93

DISTRIBUTIONAL SUMMARY - 23MC321

	25	47	48	54	72	75	77	78	83	86	94	96	111	118	119	128	133	134	135	136	141	142	144
Xu102, L.1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	14	-	63	1	-	578	93	-
L.2	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	5	-	44	-	-	354	19	-
Xu103, L.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	8	-	-	85	19	-
L.2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	6	-	-	144	18	2
L.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	96	20	-
L.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	41	6	-
Xu201, L.1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	30	1	-	182	23	-
L.2	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	34	-	-	134	18	5
L.3	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	21	-	-	56	20	-
Xu202, L.1	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	4	24	3	1	205	4	-
L.2	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	60	2	-	398	8	-
L.3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	251	10	-
Surface	1	-	1	-	-	3	2	1	1	-	1	1	-	-	-	-	-	102	1	-	135	3	-

Unfortunately, neither of the proximal point fragments in Group 25 can be considered temporally diagnostic. Both were probably corner-notched but an insufficient amount of both specimens is present to indicate any time period. Likewise, the point fragments in Groups 47 and 48 are not particularly informative. While they are indicative of hunting activities, little else can be said of any of the point fragments.

The specimen in Group 54 indicates another activity on the site (i.e. drilling or reaming), but the sample size is too small to give a good indication of its relative importance. While the distal biface fragment in Group 72 represents a fragment of a completed tool, wear is minimal and the function of the tool is unknown. The number of biface fragments in Group 75 is typical of all sites in the area. While indicative of a long use-life for tools until highly fragmentary, they exhibit no criteria which lends them to functional classification.

The cores in Group 77 and core fragment in Group 78 are indicative of the use of local sources of raw material. Their number is relatively high given the sample size. The worked chert in Group 83 indicates attempts to work blocky and irregular chert. While flakes were removed, the specimen appears to have been too irregular to successfully complete. Such attempts are indicative of the general scarcity of chert.

The flake tool in Group 86 was apparently used as a cutting tool. A single utilized flake out of the total recovered chert waste is a very low percentage (cf. 23MC142 and 23MC298, this volume). This appears in large part to be the result of the extremely small size of recovered chert waste. While utilzied flakes often make up the largest artifact category on sites, the number of potentially usable chert flakes recovered is very small.

The ground and pecked stone in Groups 94 and 96 are plant processing tools. Pecked faces lack readily discernible individual peck marks and were not used in direct contact with dense materials. The battering on the specimens in Group 94 resembles the pecking on the face, and individual peck marks are not discernible. The battering on the specimen in Group 96 exhibits discernible peck marks with some edge shattering. This specimen appears to have been used in direct contact with dense mateials.

The specimen in Group 111 is a spall of a piece of ground stone. The spall was utilized after fracture. Edge damage consists of light step fracturing and edge rounding. The specimen was used as a cutting tool.

Although there are five specimens of ground hematite in Group 118, all appear to be fire-cracked portions of a single specimen. The specimen was apparently ground for pigment. The hematite flakes (Group 119) exhibit the criteria of percussion flakes. Flake removal was performed for tool-shaping as well as for other undetermined reasons.

The ceramics (Group 128) are not particularly informative. Sand-tempered and sand and grit-tempered ceramics from the area commonly belong to Late Woodland components and are generally similar to Weaver wares. Unfortunately, the material recovered lacks any decoration, and such a placement would be tenuous based on the material recovered. The burned clay (Group 133) is also not particularly informative as burned clay may be created by a variety of thermal activities.

The remainder of the material recovered is lithic waste or unmodified stone. The density of chert waste recovered falls within moderate densities for sites in the area. Chert waste consits largely of bifacial thinning, trimming, and retouch flakes. The presence of other raw material types (quartzite and quartz) indicates the use of local sources of raw material. The fire-cracked rock recovered is also present in average densities. Fire-cracked rock is the result of thermal activities, often cooking. While fire-cracked rock is often concentrated in features, it is also dispersed throughout sites. No readily apparent concentrations of it were found, and no features of any kind were present in the excavated areas.

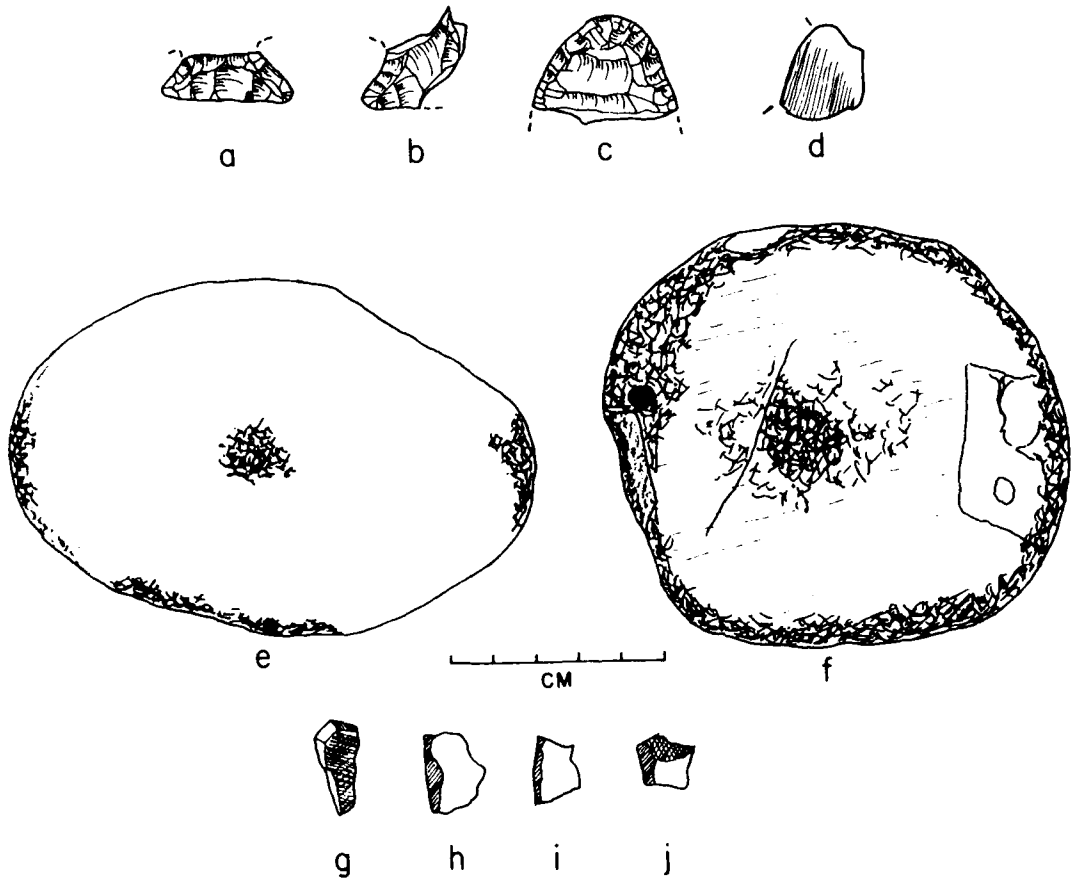

Figure 173. 23MC321. Artifacts. (a-b) Group 25, (c) Group 72, (d) Group 111, (e) Group 94, (f) Group 96, (g-j) Group 118.

This site is located on the left (east) bank of the East Fork. The site lies on the flood plain along the edge of a small, intermittent stream and is sheltered by a high hill to the north. The site area is essentially level. The river originally flowed some 30 feet west of the site area, and the edge of the site lies along a small, intermittent stream. The size of the site could not be adequately determined as approximately the southern one-half of the site had been destroyed by a tree disposal pit but is estimated to have been approximately 120 feet east-west by 50 feet north-south. The elevation of the site is approximately 780 feet m.s.l. Vegetation originally consisted of oak-hickory forest, and visibility was very poor. Surface material was collected after the area had been cleared. Visibility at that time was fair. Material density appeared to be moderate, and material was collected only from the northern edge of the site.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Thick Chert Biface Fragment 1
- Miscellaneous Worked Chert 1

LITHIC WASTE
- Chert Flakes 4
- Fire-cracked Rock 1

None of the material recovered is diagnostic of any chronological period, site function, or seasonality. Likewise, previous collections on the site (Grantham 1977) did not yield any diagnostic material. Little else can be said of the site.

This site is located on the left (east) bank of the East Fork. The site lies on the floodplain of a small, intermittent stream approximately one-half mile north of the dam axis. The site lies south of the intermittent stream between the stream and a hill slope. The site is buried as no material is present on the surface. Material was present only on the surface of a tree disposal pit. The river originally flowed approximately twenty feet west of the site and is bounded on the north by the intermittent stream. The size of the site could not be adequately determined as no surface material is present beyond the boundaries of the tree pit. The elevation of the site is approximately 760 feet m.s.l. No vegetation had begun to grow on the pit, and visibility was good. Material density could not adequately be determined but is probably high. If the site consists of a relatively thin deposit, the intermixing involved in refilling the eight foot deep pit would result in apparent lowering of material density. It is not presently known how much of the site is left intact.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
Medial Projectile Point Segment with Shoulders (Figure 174, a) . . 1

LITHIC WASTE
Chert Flakes 3

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. Previous collections on the site (Grantham 1977) recovered a corner-notched, concave-based point fragment. Although it was originally estimated that the point was Late Archaic, it is very tenuous to base the components on a site on a single point. Little else can be said of the site.

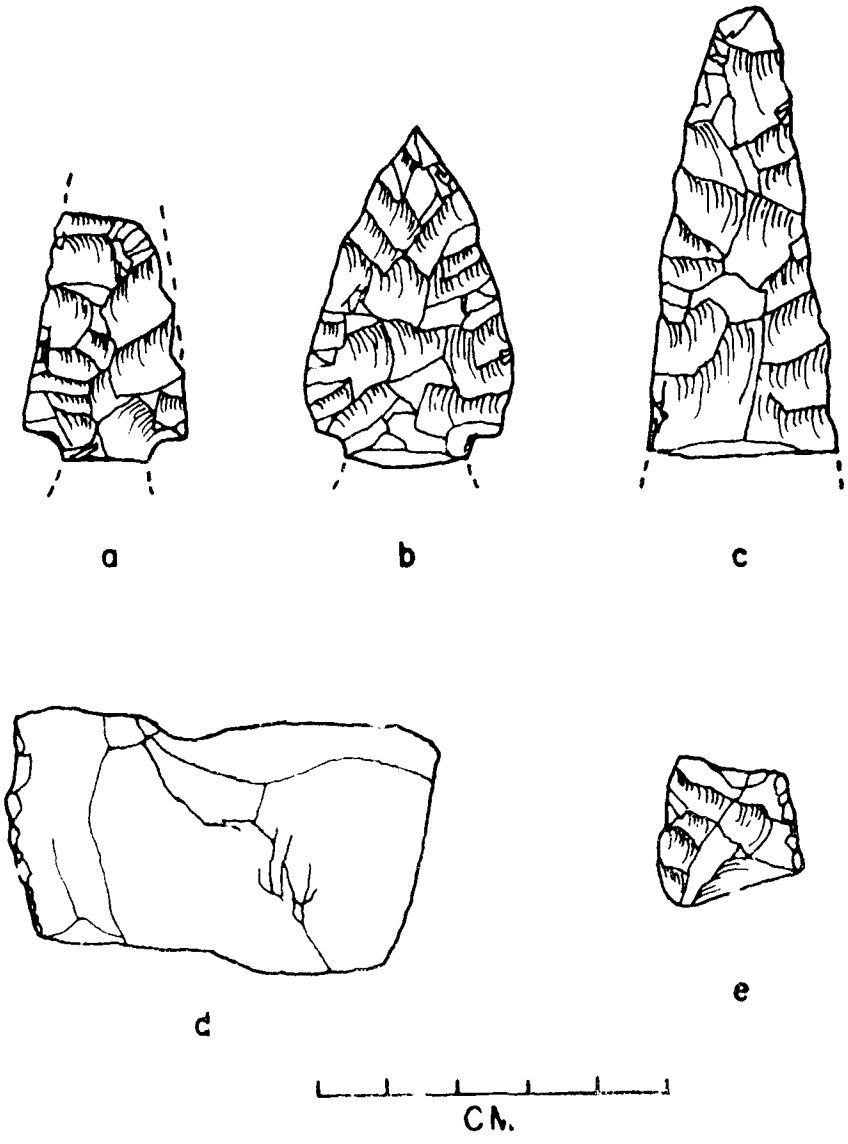

Figure 174. 23MC327, 23MC328, and 23MC340. Artifacts. (a) Medial Point Segment - 23MC327, (b-c) Distal Point Fragments - 23MC328, (d) Utilized Core Fragment -23MC328, (e) Thin Biface Fragment with Retouch - 23MC340.

23MC328

This site is located on the left (east) bank of the East Fork. The site lies on the floodplain of a small, intermittent stream just across the latter from 23MC327. The site lies on the flat of the floodplain and is not on a rise. The site area is bounded on the north by a fairly high hill and on the south by the intermittent stream. The river originally flowed approximately 30 feet west of the site area. The size of the site could not adequately be determined surficially but is estimated to be 130 east-west by 100 feet north-south. The elevation of the site is approximately 763 feet m.s.l. Vegetation originally consisted of oak-hickory forest, and visibility was very poor. Material was collected after the site area had been cleared. The site appears to be shallowly buried as very little material appears on the surface. Most of the material was recovered from a bulldozer cut near the western edge of the site area. Material density could not accurately be determined but is probably fairly high. As the site is buried, it is difficult to estimate what shape the site is in but probably is in a good state of preservation.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
Distal Projectile Point Fragments
(Figure 174, b-c) 2

FLAKE TOOLS
Utilized Core Fragment
(Figure 174, d) 1

LITHIC WASTE
Chert Flakes 17

None of the recovered material is diagnostic of any chronological period, site function, or of seasonality. Previous collections on the site (Grantham 1977) likewise did not recover any diagnostic material. Little else can be said of the site.

This site is located on the left (east) bank of the East Fork. The site lies on a yellowish, sandy rise and the floodplain. It lies on the left bank of an old river channel on an overbank deposit of an old natural river leeve. A small, intermittent stream flowed into the river channel along the southern edge of the site. The river originally flowed some 300 feet west of the site area, while the intermittent stream flowed approximately 40 feet south of the site. The size of the site is approximately 230 feet north-south by 80 feet east-west. Elevation of the site is approximately 763 feet m.s.l. Vegetation consisted of scattered weeds in a field which at one time had been plowed. Visibility was poor to fair. Material was collected from a fairly small area which had been lightly scraped by a bulldozer. Material density was relatively low. The site area had been plowed, but it could not be determined surficially if any material was present below the plow zone.

The state of preservation of materials on the site was unknown. It was decided to perform limited testing of the site, as samples from bottomland sites were largely surface collections. It appeared doubtful that impacts from inundation would be severe. Few bottomland sites in the lower part of the reservoir are not deeply buried. As the site was exposed on the surface, testing of the site would be useful if future inundation studies should occur. Likewise, a sample of material for comparative purposes was desirable. Points from the area just to the north indicated that these small series of sites were probably late sites. While material density was low, we hoped to gain some information on temporal placement.

A single one and one-half meter square was laid out for excavation. The excavation was placed in the east-central portion of the material distribution (Figure 175). The deposits in this area appeared to be overbank deposits from the old meander scar just west of the site. A second excavation unit was placed on the western side of the meander scar. Although no cultural material was noted on this side of the meander scar, we wished to use this square as a control square. Excavations on the east side of the meander scar produced moderate levels of glacial gravel, and the control square would provide us with information on whether this glacial gravel was natural inclusions or manuports. The squares were to be excavated in arbitrary ten centimeter levels. While it was clear that the area had been plowed, we did not know the depth of disturbance. A

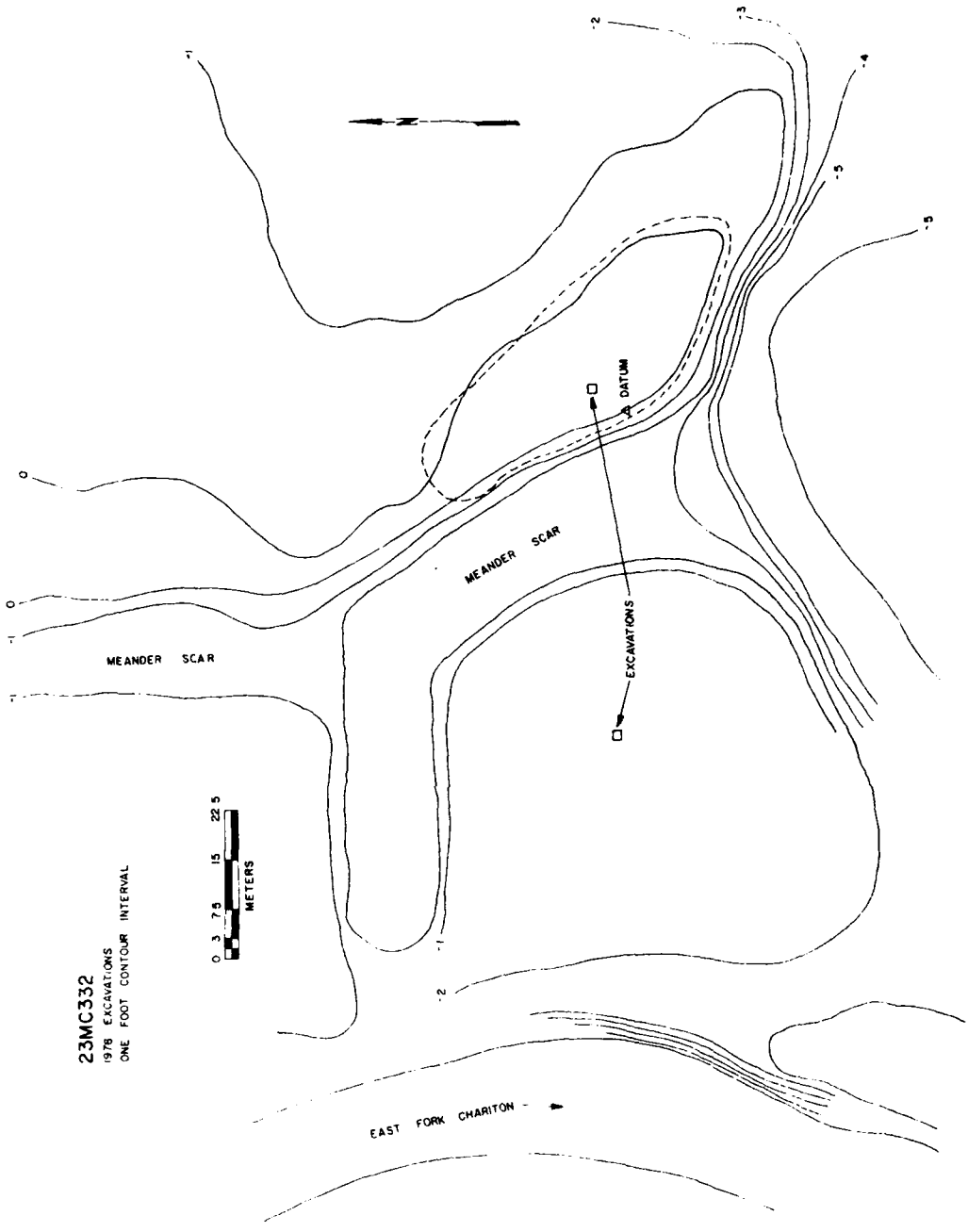

Figure 175. 23MC332. Site map and location of excavations.

single ten centimeter level was excavated. A second level was begun in the test square and the control square. This level contained a heavy tenacious clay with well-developed columnar ped structure. Due to the extremely high water level at the time of testing, excavation was extremely difficult and screening of materials was impossible. The level was shovel skimmed to a depth of 15 centimeters below the surface when excavations became impossible. As no cultural material was apparent in this level, matrix was not screened.

The only physical stratigraphy noted in the excavations was the result of depositional history and soil horizonation. An Ap-horizon extended from the surface to a depth of approximately 11 centimeters below the surface. This horizon consisted of a mixed yellowish brown silt loam near the surface and increasing in darkness with depth. This was underlain by a dark gray B-horizon with well-developed columnar ped structure. Soil texture was clay. This horizon was culturally sterile and slightly gleyed.

Description of Materials

Lithic Waste

Group 134: Chert Waste - 2

Only two unmodified chert flakes were recovered from the test square in the first level. Although the second level was not screened, no chert waste was noted in shovel skimming.

Group 141: Fire-cracked Rock - 10

Nine pieces of fire-cracked rock were recovered from the test square, and one piece was recovered from the control square.

Group 142: Unmodified Stone - 90

A total of 81 pieces of unmodified glacial gravel were recovered from the test square, and nine pieces of glacial gravel were recovered from the control square. The control square was excavated since moderate amounts of glacial gravel were recovered from the test square.

Historic

Group 144: Miscellaneous Historic Material - 13

Only a single piece of iron wire was recovered from the test square. Twelve pieces of clear window glass were recovered in the control square.

The material recovered from the site is not diagnostic of any chronological period, site function, or of seasonality. Only one of the chert flakes recovered is local chert. The control square excavated on the opposite side of the meander scar indicates that much of the glacial gravel noted in the test square does not appear to be natural inclusions in the soil. Likewise, material types do not appear to be similar to that in the uplands to the east.

TABLE 94

Distributional Summary - 23MC332

Group	Test Square	Control Square
134	2	-
141	9	1
142	81	9
144	1	12

This site is located on the left (east) bank of the East Fork. The site lies on a very low rise at the entrance of a small intermittent stream into the East Fork floodplain. The nature and origin of the rise could not be determined. The river originally flowed some 680 feet east of the site area, while the small intermittent flowed approximately 15 feet to the south. The size of the site is estimated tc be 100 feet in diameter. The elevation of the site is approximately 762 feet m.s.l. Vegetation consisted of grass and weeds in a field which had been plowed several years previously, and visibility was poor to fair. Material was collected largely along bulldozer tracks which had slightly modified the surface. Material density was difficult to determine but is not believed to be high. The site area had been plowed, but it could not be determined surficially if any material is present below the plow zone.

It was decided to perform limited testing of the site, as samples from bottomland sites were largely surface collections. The degree of impacts to the site after inundation was unknown. There is an intermittent stream entering from the east, and some bottomland scouring could occur. Few bottomland sites in the lower part of the reservoir are not deeply buried. As the site was exposed on the surface, testing of the site would be useful if future inundation studies should occur. Likewise, a sample of material for comparative purposes was desired. Points from the area just to the northwest indicated that these small series of sites were probably late sites. While material density was low, we hoped to gain some information on temporal placement.

A single one and one-half meter square was laid out for excavation. The excavation was placed in the central portion of the surface distribution (Figure 176). The deposits appeared to be channel fill deposits. The square was to be excavated in arbitrary ten centimeter levels. While it was clear that the area had been plowed, we did not know the depth of disturbance. A single ten centimeter level was excavated. A second level was begun, but was not completed. This level contained a heavy tenacious clay with well-developed columnar ped structure. Due to the extremely high water level at the time of testing, excavation was extremely difficult, and screening of materials was impossible. The level was shovel skimmed to a depth of 15 centimeters below the surface when excavations became impossible. A limited amount of cultural material was recovered, and no chert waste was noted in the shovel

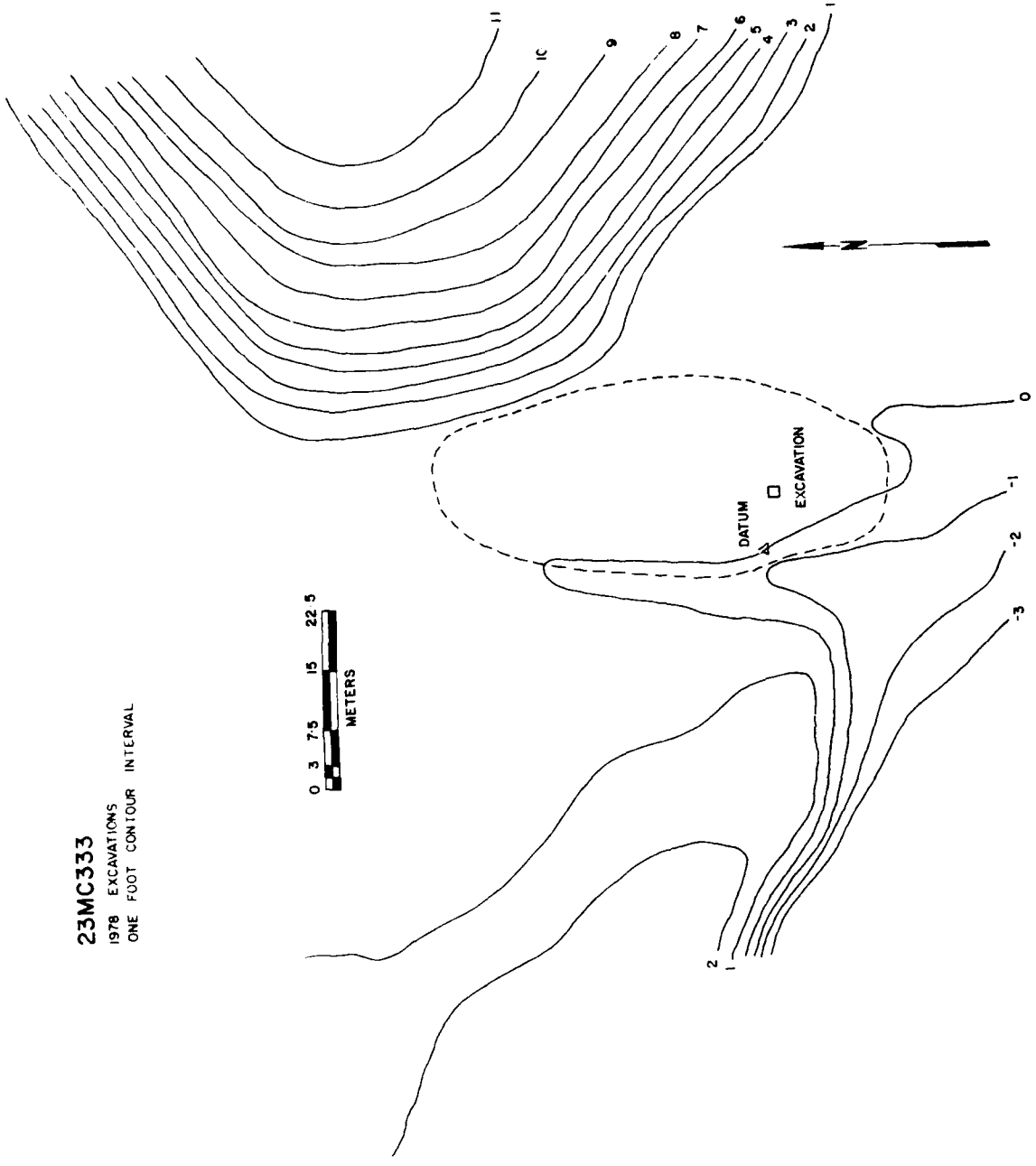

Figure 176. 23MC333. Site map and location of excavations.

skimming. As no chert waste was readily apparent, matrix was not screened.

The only physical stratigraphy noted in the excavations was the result of depositional history and soil horizonation. An Ap-horizon extended from the surface to an unknown depth. It was estimated that the plowzone extended to a depth of approximately ten centimeters based on the ease of excavation. Both this horizon and the underlying B-horizon were dark gray in color and even textured throughout. There was no visible color change indicative of the base of the Ap-horizon. Soil texture in the Ap-horizon was a clay loam changing rapidly to heavy clay below approximately ten centimeters. By fifteen centimeters below the surface, a well-developed B-horizon with columnar ped structure was encountered. This horizon was almost culturally sterile and slightly gleyed.

Description of Materials

Bifaces and Biface Fragments

Group 75:a Thin Biface Fragment - 1

The specimen in this group is too small to be able to determine what kind of tool it is. It exhibits no external criteria which would allow inclusion in any other category. The specimen exhibits only secondary flaking. Edges have been trimmed and lack sinous edges typical of primary flaking. The fragment is too small to be able to determine if primary flaking was ever present.

Ceramics

Group 133:a-c Burned Clay - 3

The specimens in this group are clay which have been intentionally or unintentionally fired. Specimens lack temper. Colors range from light tan to black. All specimens are highly irregular in shape and are small.

Lithic Waste

Group 134: Chert Flakes - 3

Three unmodified chert flakes were recovered from the excavations. One specimen appears to be local material, and the other two have non-local points of origin.

Group 141: Fire-cracked Rock - 16

Sixteen pieces of fire-cracked rock were recovered from the excavation. All specimens are small and probably represent thermal modifications of glacial gravel already present in the soil.

Group 142: Unmodified Stone - 247

All specimens come from the excavations. They represent residual material in the soil, probably resulting from the entrance of the intermittent stream to the east into the East Fork floodplain. Composition of gravel is similar to the samples from the uplands to the east.

The material recovered from the site is not diagnostic of any chronological period, site function, or of seasonality. Two of the chert flakes recovered are of non-local materials. The glacial gravel recovered in the excavation unit matches closely the gravel in the uplands to the east. The fire-cracked rock is small and probably represents thermal alterations of the residual gravel in the soil and are not manuports. Likewise the burned clay is highly irregular and probably represents unintentional modifications of the existing clay in the soil matrix.

TABLE 95

Distributional Summary - 23MC333

Group	xu 102 Level 1	Level 2
75	1	-
133	3	-
134	3	-
141	14	2
142	245	2

23MC336

This site is located on the left (east) bank of the East Fork. The site lies on a high hill bounded by a broad, deep draw to the north and by a small intermittent stream to the south. Hill slopes are fairly steep on all edges. The river originally flowed approximately 50 almost vertical feet from the site area. The size of the site could not accurately be determined but is estimated to be 320 feet east-west by 180 feet north-south. The elevation of the site is approximately 800-816 feet m.s.l. Vegetation consisted of oak-hickory forest, and visibility was very poor. Material was recovered from a small bulldozed area along the extreme western edge of the site downslope from the main body of the site. Material density could not accurately be determined but is probably fairly high. The site appeared to be in an excellent state of preservation.

MATERIAL COLLECTED

PREHISTORIC

LITHIC WASTE
- Chert Flakes 2
- Fire-cracked Rock. 1

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. Previous collections on the surface of the site (Grantham 1977) recovered a single sand-tempered body sherd with a smoothed exterior. Although this would tend to indicate that there was a Woodland component on the site, little else can be said of it. None of the rest of the material recovered from the previous surface collections was particularly informative, and little can be said of the site.

This site is located on the right (west) bank of the East Fork. The site is located on the outer edge of an old meander loop of the river. The site lies on what would be the natural river leeve. The river originally flowed some 300 feet east of the site area. The depressed area immediately east of the site marks an old river channel, and the site originally would have been on the edge of the river. The size of the site is estimated to be 150 feet north-south by 50 feet east-west. The elevation of the site is approximately 760 feet m.s.l. Vegetation consisted of dense grass and weeds, and visibility was generally poor. Material was collected from a few small bare areas on the site, and material density could not adequately be determined. The site area appeared to have been plowed and probably is in a poor state of preservation.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
Thin Chert Biface Fragment with Retouch (Figure 174, f) 1

LITHIC WASTE
Chert Flake. 1

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. Likewise, previous collections from the surface of the site (Grantham 1977) did not yield any diagnostic material. Little can be said about the site.

23MC345 H

This site is located on the right (south) bank of the East Fork. The site lies on a high hill overlooking the river. The hill is bounded to the south by a broad, deep draw and to the north by the river. Hill slopes are steep to the north and south; moderate to the east. The river originally flowed approximately 100 feet north of the site along the base of the hill. The size of the site is approximately 120 feet east-west by 70 feet north-south. The elevation of the site is approximately 800-807 feet m.s.l. The site is an historic site consisting of at least two buildings and a cistern. Neither of the buildings were standing nor have they been standing for some time. Visibility was generally poor. Material was collected from the entire surface of the site after the trees were removed under the clearing contract. Material density was high.

MATERIAL COLLECTED

HISTORIC

SHELL
- Hinge Fragment 1
- Miscellaneous Fragments 3

BONE
- Cow Molar 1
- Horse Molars 2
- Pig Molars 4
- Pig Incisor 1
- Miscellaneous Charred Large Mammal Bone . 1
- Miscellaneous Large Mammal Bone 1

METAL
- Cast Iron Kettle Lid 1
- Cast Iron Hinge 1
- Cast Iron Cylinder 1
- Miscellaneous Cast Iron 6
- Knife Blade 1
- Sheet Metal 2
- Square Nails, Forged Heads 8
- Miscellaneous Square Nail Fragments . . . 7
- Square Bolt, Forged Head 1
- Small Brass and Iron Lock 1
- Miscellaneous Unidentified Brass Fragment 1
- Brass Harness Buckle 1

Brass .32 calibre short, rimfire cartridge. 1

BRICK
Depressed Face, Vitrified and Warped. . . 2

BUTTONS
Milk Glass, Depressed Face, 4 Hole. . . . 1
Milk Glass, Domed, Square-based 1

GIZZARD STONE
Milk Glass. 1

GLASS
CLEAR
Bottle Base, Blown in Mold. 1
Raised Grape. 2
Raised Cross-hatched. 2
Raised Scroll 1
Raised, Faceted 2
Raised Gothic Window. 9
Miscellaneous Plain Window. 20
Miscellaneous Bottle Fragments. 7
Molten. 3

DARK GREEN
Miscellaneous Bottle Fragments. 2

AMBER
Miscellaneous Bottle Fragments. 4

MILK
Plain 1
Hobnail 1
Molten. 1

LIGHT BLUE GREEN
Window. 43
Bottle (Blown in Mold). 18
Insulator 1
Mason Jar 1
Miscellaneous Fragments 27
Molten. 7

DARK BLUE
Bottle. 1
Miscellaneous 1

LAVENDER
Miscellaneous Fragments 6

DARK BLUE GREEN
- Vase Base, Raised Design 1
- Rectangular Bottle. 1
- Miscellaneous Bottle Fragments. 5
- Miscellaneous Unidentified Fragments. . . 5
- Molten. 1

LIGHT BLUE
- Bottle Fragment 1

EARTHENWARE

RIMS

Type 1
- Albany Slip Interior and Exterior, Unglazed Rims 4
- Albany Slip Interior and Exterior, Salt Glazed Rims. 2

Type 3
- Albany Slip Interior, Salt Glazed Exterior. 1
- Albany Slip Interior and Exterior . . . 1

Type 10
- Albany Slip Interior, Salt Glazed Exterior. 1

Type 11
- Albany Slip Interior and Exterior . . . 1

BODIES
- Albany Slip Interior and Exterior 4
- Albany Slip Interior, Salt Glazed Exterior. 9
- Salt Glazed Exterior, Unglazed Interior. 1
- Albany Slip Exterior, Unglazed Interior. 1

BASES
- Albany Slip Interior and Exterior 3
- Albany Slip Interior, Salt Glazed Exterior. 4
- Unglazed. 1

STONEWARE

RIMS

Type 2
- Salt Glazed Interior and Exterior . . . 1

Type 5
Albany Slip Interior, Salt Glazed Exterior. 1
Salt Glazed Interior and Exterior . . . 1

Type 9
Salt Glazed Interior and Exterior . . . 3
Albany Slip Interior, Salt Glazed Exterior. 2

Type 12
Salt Glazed Interior and Exterior . . . 1

Type 13
Salt Glazed Interior and Exterior . . . 1

BODIES
Albany Slip Interior and Exterior 3
Salt Glazed Interior and Exterior 4
Salt Glazed Exterior, Albany Slip Interior. 11
Salt Glazed Exterior, Unglazed Interior . 3
Unglazed Interior and Exterior. 3
Partial Albany Slip/Salt Glazed Interior and Exterior. 1

HANDLES
Lug - Albany Slip Interior, Salt Glazed Exterior 2

PIPE
Plain Bowl Sherd. 1

IRONSTONE
RIMS
Plain White 35
Embossed White. 5
Blue Transfer 14
Red Transfer. 1
Black Transfer. 1
Green Transfer. 1
Dark Brown Transfer 1
Speckled Blue Transfer. 1
Blue Feather Edged, Embossed. 5
Black and Blue Lined. 1
Dark Blue Floral (Painted?) 2
Painted Blue. 1
Dotted Blue with Blue Lines 1
Spray Green 1
Painted Brown and Blue Lines. 1
Miscellaneous Floral Designs (Painted?) . 5

BODIES

Plain White	75
Embossed White	5
Blue Transfer	36
Red Transfer	3
Brown Transfer	3
Speckled Blue Transfer	6
Black Transfer	4
Blue Dotted Transfer	2
Blue Feather Edged, Embossed	1
Miscellaneous Painted Floral	2
Blue, White, and Black Striped	4
Dark Blue Floral	2
Green Painted	1
Red Painted	2

BASES

Plain White	18
Embossed White	1
Blue Transfer	6
Blue Transfer Makers Marks	3
Dark Blue Floral	1

PORCELAIN

Doll Fragments	2

Although the date of construction is unknown, the artifact assemblage is fairly straigh-forward. The extremely high proportions of transfer printed whitewares is unique in the area. Price (1979:31) indicates that bright colored transfer printed wares have a fairly limited time range. They appear first about 1828 and last until ca. 1870. Blue transfer printed wares range only until ca. 1860 but occur from as early as 1830. The stoneware is locally manufactured as well as nonlocally manufactured. Salt glazed wares are generally indicative of local manufacture, while slipped wares are more common bought wares. Local manufacture plant largely ceased operations by 1860 due to the inexpensive wares produced elsewhere. The glass is largely late. No hand blown glass occurs in the assemblage.

Based on the recovered materials, it is estimated that the site was occupied from ca. 1850 to perhaps 1870 or 1880.

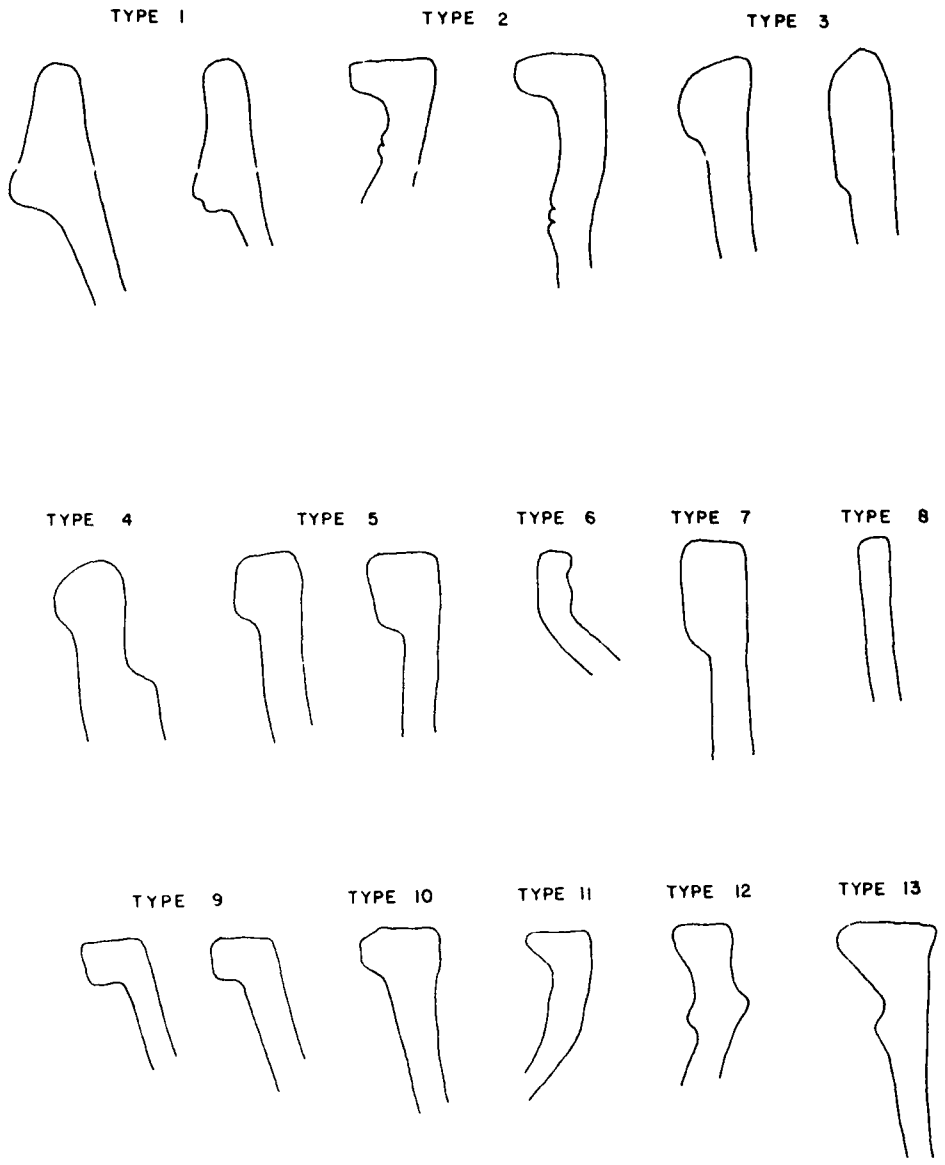

Figure 177. 23MC345H. Rim Types.

23MC347

This site lies on the right (south) bank of the East Fork. The site lies on a high, steep hill overlooking the river. There is a large intermittent stream to the south and east of the site. Slopes to the north on the river side are steep, while those to the east and south are moderately steep. There is a sandstone outcrop at the base of the hill to the north. The river originally flowed at the base of the hill, some 80 feet to the north. The site is separated from 23MC154 to the west by a definite break in material distribution. The size of the site is approximately 250 feet north-south by 150 feet east-west. The elevation of the site is 770-791 feet m.s.l. The original vegetation on the site consisted of trees, apparently secondary growth based on tree diameters. Visibility was very poor. The site was not discovered until after clearing when the entire surface was bare, and visibility was excellent. Material density was moderate, and the site area appeared to be in a moderate state of preservation. Clearing had obviously disturbed much of the upper portion of the site, and we had no good indication of the relative state of the site.

As the state of preservation appeared to be relatively good and material density was moderate, it was decided to perform limited testing of the site. It appeared, based on the physiographic setting of the site, that impacts after impoundment would probably be severe. It was decided that testing of the site prior to impoundment was desirable. While we wished to attempt to determine the temporal placement and function of the site, it was realized that a limited testing program would probably not yield a great amount of information relevant to those goals.

Two, one and one-half meter squares were laid out for excavation. One of these was in the north central portion of the site, and the second was further up the slope to the south but still toward the central portion of the site (Figure 173). The squares were excavated in arbitrary ten centimeter levels. We did not expect that the site area had ever been plowed due to the physiography of the hill. A total of two levels were excavated in each square to a total depth of 18 to 20 centimeters below the surface. Excavations were ceased at that point when a heavy, tenacious, culturally sterile clay was reached.

The only physical stratigraphy noted in the excavations was the result of soil horizonation. An A1-horizon extended from the surface to a depth of seven to nine centimeters below the surface. This level had been highly disturbed by

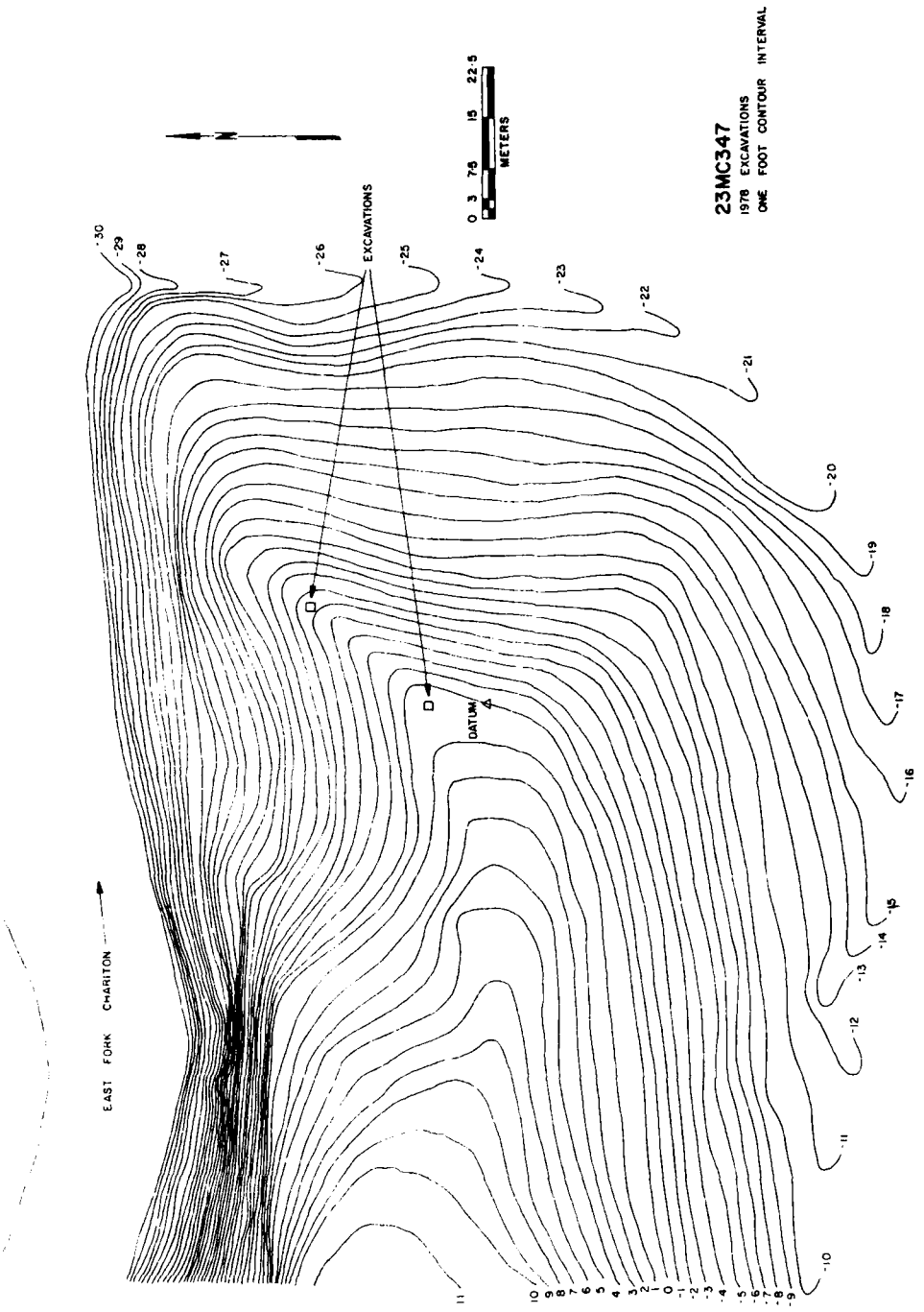

Figure 178. 23MC347. Site map and location of excavations.

clearing operations. The level contained a relatively high amount of wood chips, branches, and roots which resulted from clearing. These were intermixed throughout much of this level. A light brown B1-horizon extended from that point to a depth of 18 to 20 centimters below the surface. This level contained constantly decreasing material until a B2t-horizon was reached at the latter depths. This B2t-horizon extended for an undetermined depth below that point. Material density near the surface was fairly dense decreasing sharply with depth.

Description of Materials

Points

Group 27:a Straight-based, Corner-notched Point - 1 proximal fragment (Figure 179, a)

The specimen in this group exhibits a straight base, rounded stem-base juncture, expanding stem, broad corner notches, oblique shoulders, straight blade margins, and a bi-convex cross-section. The chipping pattern consists of primary percussion and secondary flaking. The primary flaking has largely been obscured by later flaking. An island of primary flaking is present on one face. Secondary flake scars are medium in size, lamellar to slightly expanding, uneven in size, and inconsistent in distribution. It exhibits little resharpening. Blank material appears to have passed through a preform stage based on the flaking pattern. The specimen exhibits a transverse stress fracture and a large percussion fracture removing part of the transverse stress fracture.

Group 44:a Heavily Modified Point -1 (Figure 179, b)

The specimen in this category has one remaining notch and blade margin intact. The remainder of the point has been heavily modified. So little of the point remains intact that it is impossible to determine original morphology. The chipping pattern consists of primary percussion and secondary pressure flaking. The specimen exhibits a transverse stress fracture through the base. An attempt was made to repair this fracture as numerous flakes have been removed from one edge of this fracture. The specimen also exhibits a large percussion fracture which removed the distal end. Subsequent to those fractures, the specimen was heat altered, and three large potlids removed one-half of the specimen. The specimen then exhibits tertiary use. The ragged edge produced by the potlidding was retouched and used again.

Group 47:a-c Distal Projectile Point Fragments - 3

The specimens in this group exhibit two lateral margins converging toward a point. All the specimens are fragments of medium to large points. Specimens range in size from small distal segments to almost entire blade segments. The chipping pattern on all three consist of primary percussion and secondary pressure flaking. Two specimens exhibit a transverse stress fracture. One specimen exhibits an oblique stress fracture with one sharp edge. This edge exhibits utilization after fracture in the form of light bifacial flake removal from the edge. It appears to have been utilized in a cutting motion.

Group 48:a Medial Projectile Point Segment - 1 (Figure 179, c)

The specimen in this group is a point with both proximal and distal ends fractured. The specimen exhibits part of both lateral margins and both shoulders. It exhibits abrupt shoulders. The chipping pattern consists of primary percussion and secondary pressure flaking. It exhibits moderate resharpening of both lateral margins. The last resharpening apparently occurred after the distal fracture as resharpening extends onto the fracture. The specimen exhibits a transverse stress fracture across the blade and another transverse stress fracture across the notches.

Bifaces and Biface Fragments

Group 67:a Proximal Fragment - Thin, Broad Biface with Square Base - 1 (Figure 179, d)

The specimen in this group exhibits a straight base, straight lateral margins, and a bi-convex cross-section. The chipping pattern consists of primary percussion flaking only. The edges exhibit careful edge trimming, but this was done by percussion as well. The specimen exhibits little or no wear and appears to be a fragment of a blank. It exhibits a transverse stress fracture.

Group 70:a Proximal Fragment - Thin, Narrow Biface with Rounded Base - 1 (Figure 179, e)

The specimen in this category exhibits a distinctly rounded base and a bi-convex cross-section. Very little of the lateral margins remain, and it is impossible to determine if they were straight or convex. The chipping pattern consists of secondary pressure flaking only. The specimen exhibits little or no wear and appears to be a preform fragment. It exhibits an oblique stress fracture.

Group 72:a-b Distal Fragments - Thin, Broad Pointed Bifaces - 2 (Figure 179, f-g)

The specimens in this group exhibit pointed distal ends and broaden more rapidly from the points than do projectile points. They also lack careful edge trimming more characteristic of points. Specimen 72:a exhibits primary percussion flaking only. Edges are not trimmed, and it still retains a sinuous edge. Specimen 72:b exhibits primary percussion and some secondary pressure flaking. The specimen exhibits edge trimming to even the edges. Neither specimen exhibits any observable wear. Both exhibit transverse stress fractures.

Group 75:a-p Miscellaneous Thin Biface Fragments - 16

The specimens in this category are biface fragments too small to be able to determine what type of tools are represented. They exhibit no attributes other than bifacial flaking which would allow them to be included in any other category. Three specimens exhibit primary percussion flaking only. Eleven specimens exhibit primary percussion and secondary pressure flaking. Two specimens are medial fragments without lateral margins. Specimens exhibit a wide variety of fracture patterns.

Group 76:a-c Miscellaneous Thick Biface Fragments - 3

The specimens in this category are biface fragments too small to be able to determine what type of tools are represented. They exhibit no attributes other than bifacial flaking which would allow their inclusion in any other category. The chipping pattern on all three specimens consists of primary percussion flaking only. Two specimens exhibit one transverse stress fracture and a longitudinal compound fracture. One specimen exhibits two transverse stress fractures.

Cores

Group 77:a-f Chert Polyhedral Cores - 6

The specimens in this category are chert nodules from which numerous flakes have been removed. Flakes have been struck off in multiple directions, and there is no pattern to flake removal. All have had a large number of flakes removed. All specimens are glacial chert. Only three specimens still retain cortex.

Group 78:a-e Chert Core Fragments - 5

The specimens in this group exhibit all of the attributes of cores as well as one face which represents a fracture removing it from a larger core. All specimens are fragments of polyhedral cores. Four specimens are glacial chert, and none have cortex remaining. One specimen is a local bedded chert and still retains some cortex.

Group 80:a Chert Nucleus - 1

The specimen in this category is a chert core which has been exhausted. It appears to have been a polyhedral core. The specimen is so small that it would have been impossible to remove additional flakes. Final flakes were removed from multiple directions. The specimen is glacial chert and still retains a small area of cortex.

Ground/Pecked Stone

Group 90:a-g Pecked Stone - 7 (Figure 180, a-e)

The specimens in this group exhibit pecking on one or both faces. Pecking is generally centered on the faces. The pecking varies considerably from fairly light scattered pecking to more centralized heavier pecking. Four specimens exhibit pecking on only a single face; one specimen exhibits pecking on two faces; and two specimens are fire-cracked so that the detrmination of the number of pecked faces is impossible. The degree of pecking is generally fairly light. Individual peck marks are not readily distinguishable. Cortex removal is present on most specimens, and the darker interior color is revealed.

Group 91:a-c Ground Stone - 3 (Figure 180, f)

Specimens in this group exhibit at least one ground face. Specimens exhibit cortex removal since glacial deposition. All three specimens lack detectable cultural striations or polish. Only one specimen is complete. The other two specimens are fire-cracked, and it can not be determined if grinding was the sole modification. The degree of wear on all specimens is relatively light.

Group 93:a Ground and Pecked Stone - 1 (Figure 181, a)

The specimen in this category exhibits one face with both grinding and pecking. Pecking is centered on the face, although longer with the longitudinal axis. Pecking is readily discernible by cortex removal and slight depression in the pecked area. Individual pecks marks are not readily

distinguishable. The degree of pecking is not heavy. The same face exhibits light grinding. Grinding has removed cortex slightly and revealed the interior color. Striations are not readily apparent, but there is slight polish on higher points of the surface. The alternate face has also been modified. It exhibits heavy battering. Individual peck marks are readily distinguishable and was used in direct contact with dense materials. Individual batter marks are scattered across the surface and are not centered.

Group 96:a-b Ground, Pecked and Battered Stone - 2 (Figure 181, b-c)

Specimens in this group exhibit two pecked faces, one or both faces ground, and multiple ends and edges battered. The two specimens differ significantly in the types of wear present. Specimen 96:a exhibits heavy centralized pecking on both faces. The degree of force is heavy and centralized. Individual peck marks are distinct and was used in direct contact with dense materials. The pecking on specimen 96:b is also centralized on the face, but the degree of force is light and individual peck marks are not readily distinguishable. Specimen 96:a exhibits one ground face, and specimen 96:b exhibits two ground faces. Cortex removal is apparent on specimen 96:b, but there are no apparent striations. Specimen 96:a exhibits both cultural striations and polish on the higher points. Specimen 96:a exhibits heavy battering on one end and lighter battering on the other end and one edge. Specimen 96:b exhibits light battering around almost the entire circumference of the tool.

Group 104:a Chipped Diorite Cobble -1 (Figure 181, d)

The specimen in this group exhibits three large flakes removed from one end. They were removed with heavy percussion. The reason for the alteration is unknown.

Group 107:a Metate - 1 fragment (Figure 181, e)

The specimen in this group is a fragment of a large gabbro cobble. It exhibits two heavily ground faces. Surfaces are large, flat, and exceed the width of the remainder of the specimen.

Group 110:a Utilized Fire-cracked Rock - 1 (Figure 181, f)

The specimen in this category is a split argillite cobble. It appears to be fire-cracked. It exhibits alteration of almost the entire margin after fire-cracking. Edge damage consists of heavy edge crushing and edge

rounding. Although flake removal from the edge is largely unifacial, it was apparently used in a chopping motion. The degree of force was relatively heavy.

Hematite

Group 118:a Ground Hematite - 1 (Figure 179, h)

The specimen in this group exhibits grinding around the exterior. There are three ground facets. All three exhibit fine-grained unidirectional striations and was ground on a fine-grained abrasive. Grinding was apparently for pigment only.

Group 119:a Hematite Flake - 1

The specimen in this group is an interior flake. It exhibits all of the criteria of percussion flakes. There is no cortex on the specimen.

Ceramics

Group 133:a-f Burned Clay - 6

These speicmens are clay which has been fired intentionally or unintentionally. They differ from pottery in that they lack temper. All specimens are eroded and highly irregular in shape.

Lithic Waste

Group 134: Chert Waste - 532

A total of 93 unmodified chert flakes, 23 pieces of unmodified chert shatter, and 1 unmodified chert potlid were recovered from the excavations. Surface material included 369 unmodified chert flakes and 45 pieces of unmodified chert shatter.

Group 135: Quartzite Waste - 3

One unmodified quartzite flake and one piece of unmodified quartzite shatter were recovered from the excavations. Surface material included a single unmodified quartzite flake.

Group 136: Quartz Waste - 3

Two unmodified quartz flakes and one piece of unmodified quartz shatter were recovered from the surface.

Group 137: Silicified Sediments Waste - 1

A single unmodified silicified sediments flake was recovered from the surface.

Group 141: Fire-cracked Rock - 2,513

Fire-cracked rock is the term used to describe all thermally altered stone. A total of 2,208 specimens were recovered from the excavations, and 305 pieces were recovered from the surface.

Group 142: Unmodified Stone - 355

Specimens in this group lack any indication of intentional or unintentional modifications. Specimens appear largely to be material unintentionally transported to the site.

Historic

Group 144:a-b Miscellaneous Historic Material - 2

Two specimens of historic material were recovered near the surface in one excavation. One specimen is a piece of mortar, and the other is a flattened lead bullet.

TABLE 96

Artifact Measurements and Attributes - 23MC347

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Points						
Straight-based, Corner-notched Point						
27:a	Sur.	32*	33	7	9g*	proximal fragment
Heavily Modified Point						
44:a	106	32*	25*	7*	5g*	
Bifaces and Biface Fragments						
Proximal Fragment - Thin, Broad Biface with Square Base						
67:a	Sur.	47*	46	11	30g*	
Proximal Fragment - Thin, Narrow Biface with Rounded Base						
70:a	Sur.	25*	31*	6*	4g*	
Distal Fragments - Thin, Broad Pointed Bifaces						
72:a	Sur.	39*	37*	9*	10g*	
72:b	Sur.	21*	35*	10*	8g*	
Cores						
Chert Polyhedral Cores						
77:a	Sur.	70	57	42	133g	
77:b	Sur.	58	44	22	62g	
77:c	Sur.	55	35	33	60g	
77:d	Sur.	52	40	35	75g	
77:e	Sur.	51	42	21	33g	
77:f	Sur.	42	39	23	33g	
Chert Nucleus						
80:a	Sur.	27	20	17	8g	
Ground/Pecked Stone						
Pecked Stone						
90:a	Sur.	94	72	41	384g	Diorite lp
90:b	Sur.	123	74	39	520g	Argillite lp
90:c	Sur.	122	91	47*	567g*	Argillite lp?
90:d	Sur.	95	79	48	529g	Diorite lp
90:e	Sur.	93	71	49	441g	Argillite lp
90:f	Sur.	98	80	42	468g	Diorite lp
90:g	Sur	175	116	76	1430g	Argillite lp

TABLE 96 (cont'd)

Artifact Measurements and Attributes - 23MC347

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Ground Stone						
91:a	105	79	64	46	330g	Argillite 1g
91:b	Sur.	92*	53*	37*	170g*	Granite 1g
91:c	Sur.	62*	54*	35*	141g*	Felsite 1g
Ground and Pecked Stone						
93:a	Sur.	139	88	43	685g	Argillite 1p, 1g, 1b
Ground, Pecked and Battered Stone						
96:a	Sur.	95	56	55	403g	Quartzite 2p, 1g, 3b
96:b	Sur.	88	87	44	511g	Argillite 2p, 2g, Cb
Chipped Diorite Cobble						
104:a	Sur.	112	95	48	783g	Diorite
Metate						
107:a	Sur.	138	113	46	1287g	Gabbro 2g
Utilized Fire-cracked Rock						
110:a	Sur.	114	77	34	384g	Argillite
Hematite						
Ground Hematite						
118:a	106	36	19	6	6g	3 facets

TABLE 97

DISTRIBUTIONAL SUMMARY - 23MC347

	27	44	47	48	67	70	72	75	76	77	78	80	90	91	93
Xu102, L.1	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-
L.2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Xu103, L.1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
L.2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	1	-	3	1	1	1	2	13	3	6	5	1	7	2	1

TABLE 97 (cont'd)

DISTRIBUTIONAL SUMMARY - 23MC347

	96	104	107	110	118	119	133	134	135	136	137	141	142	144
Xu 102, L.1	-	-	-	-	-	1	-	14	1	-	-	522	90	2
L.2	-	-	-	-	1	-	1	14	-	-	-	504	58	-
Xu 103, L.1	-	-	-	-	-	-	4	49	1	-	-	770	141	-
L.2	-	-	-	-	-	-	1	42	-	-	-	412	59	-
Surface	2	1	1	1	-	-	-	414	1	3	1	305	7	-

The point in Group 27 is most similar to Woodland points found on other sites in the area (cf. 23MC74, this volume). The type occurs rarely on Late Archaic sites in Missouri (Chomko 1976:Fig. 17, i-n). The notches on this specimen are somewhat narrower than the specimens from Late Archaic sites and are more common in Early/Middle Woodland contexts in Missouri. The type is most similar to the type Norton Corner-notched (White 1968:71). Although straight-based types are not common in the Kansas City area (cf. Shippee 1967) or in the Big Bend and Lower Lamine localities (Kay 1975), they are more common in northeastern Missouri. They occur in surface collections from Cannon reservoir (Henning 1961) as well as in Middle Woodland contexts at the Pigeon Roost Creek site (Teter and Warren 1979:Fig. 8.8). Dates on this level were widely divergent but had a weighted mean date of A. D. 232 $\pm$ 90.

The other projectile point fragments are not particularly informative. The specimen in Group 44 illustrates the heavy reworking of points and tertiary uses. Laterally recycled specimens are in large part a result of the scarcity of chert in the area. Both the distal fragments (Group 47) and the medial point fragments (Group 48) are all from relatively large points, but little else can be said of them. They are all indicative of hunting activities and illustrate its relative importance in the economy.

The recovered biface fragments in Groups 67, 70, and 72 all appear to be blank or preform fragments or were broken in the manufacture process. None exhibit any observable wear. They do illustrate the transport of exotic raw materials to the area. Likewise, the large number of biface fragments indicate the long use-life of chert tools and heavy reworking until highly fragmentary.

The chert cores and fragments in Groups 77, 78 and 80 represent the use of local sources of raw material. The number of cores is relatively high for sites in the area. The percentages of non-locally derived chert waste (Group 134) is also lower. Only approximately 47 percent of the total chert waste from the excavations is non-local in origin. The numbers of quartzite waste (Group 135), quartz waste (Group 136), and silicified sediments waste (Group 137) is relatively low. Although the numbers from the excavations are low, they do indicate the use of local sources of raw materials.

As with a large number of sites in the area, the numbers of ground and pecked stone are high. The specimens in Groups 90, 91, 93, 96, and 107 are apparently connected with plant processing. Their large numbers indicate that plant processing was an important activity. Their numbers relative to projectile points yields a ratio of 7:1 which is in line with numbers from most of the seasonal sites in the area. Although at least two of the specimens included indicate use in direct contact with dense materials (specimens 93:a and 96:a), both exhibit use as plant processing tools as well. The reason for the modification in Group 104 is unknown. The specimen in Group 110 exhibits heavy edge damage. The degree of edge crushing and edge rounding indicates it was used in a chopping motion. It was not used in direct contact with dense materials as the flakes removed from the edge are small, and edge rounding is the dominant characteristic.

The ground hematite (Group 118) was modified for pigment. Only the exteriors are ground, and there is no regular shape. The hematite flake (Group 119) is not informative. Hematite is chipped for a variety of reasons including both tool shaping as well as cortex removal prior to grinding for pigment.

The remainder of the materials recovered are waste materials. The burned clay (Group 133) are highly variable in color and consistency and are probably a result of thermal activities on the site. The waste materials in Groups 134, 135, 136, and 137 are a result of tool manufacture and tool maintenance. Flakes are characterized by a preponderance of bifacial thinning, trimming, and retouch flakes. The fire-cracked rock (Group 141) is especially numerous. Fire-cracked rock is the result of the use of stone for heat retention in thermal activities (especially cooking). Although fire-cracked rock is often concentrated in features, it is often widely dispersed in sites. None of the fire-cracked rock recovered exhibited spatial patterning. The unmodified stone is apparently the result of unintentional transport to the site. The glacial till in the area of the site is relatively stone free. The recovered historic material is surprising low considering there was an historic site (23MC345 H) just west of the edge of the site.

In summary, the site contains at least an Early/Middle Woodland component. The activities include hunting, chert reduction, plant processing, various incidental tool use for scraping, cutting, and chopping, pigment production, tool manufacture and maintenance, and thermal activities. Subsistence activity indicators reveal that plant processing

was more important than hunting, and it is estimated that the site represents a fall seasonal site.

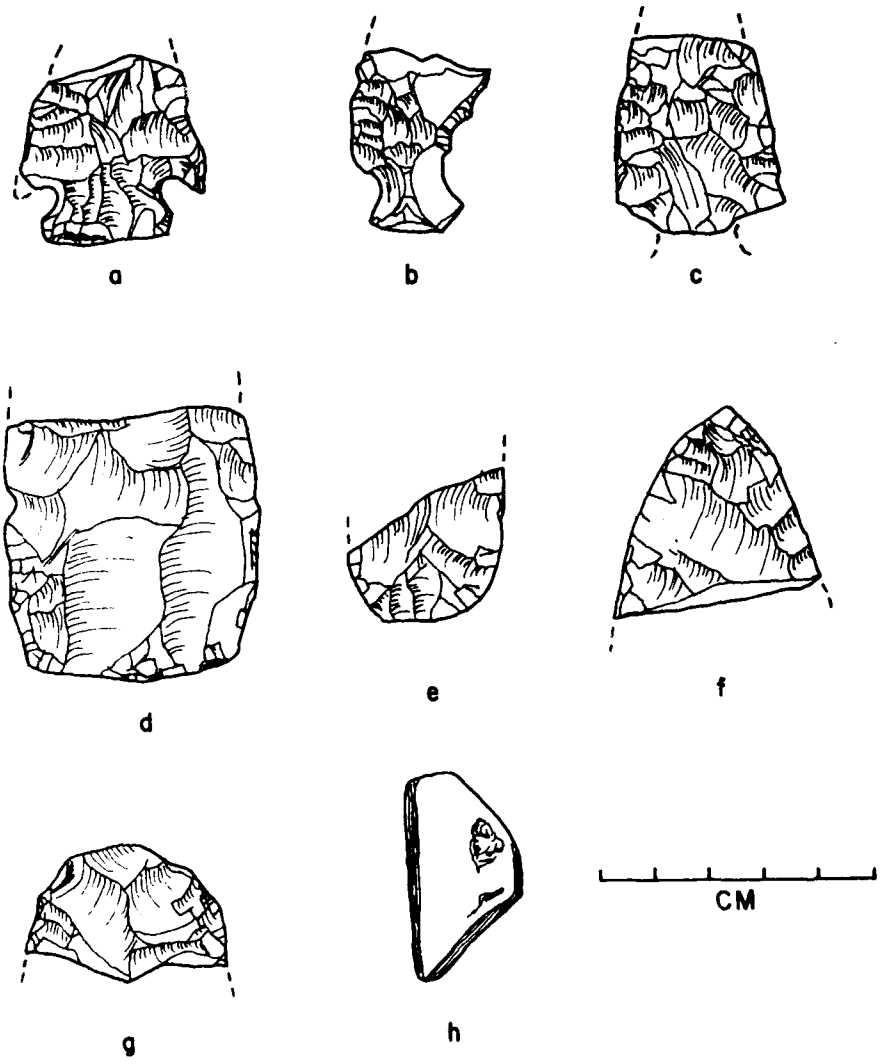

Figure 179. 23MC347. Chert Artifacts. (a) Group 27, (b) Group 44, (c) Group 47, (d) Group 67, (e) Group 70, (f-g) Group 72, (h) Group 118.

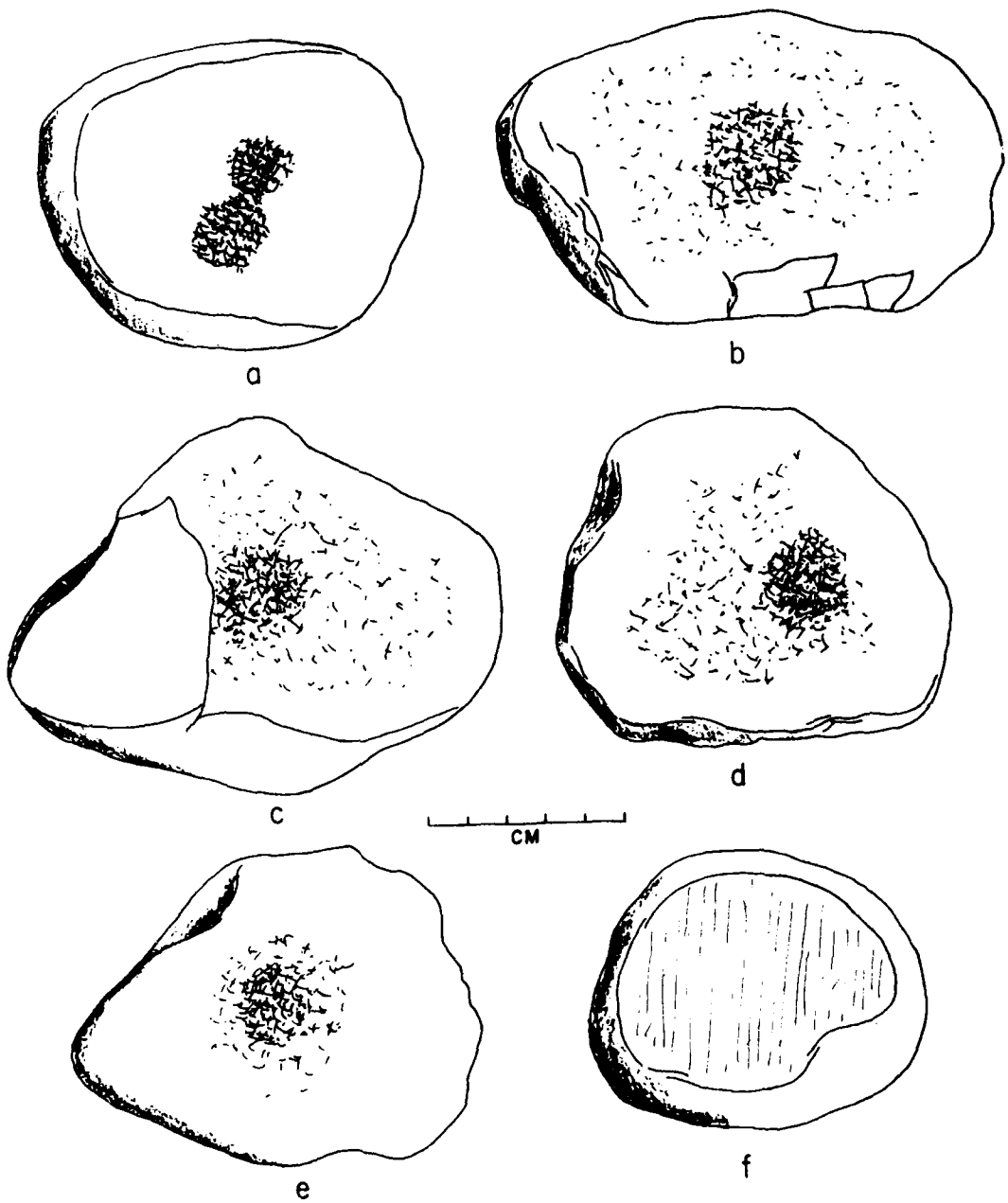

Figure 180. 23MC347. Pecked/Ground Stone. (a-e) Group 90, (f) Group 91.

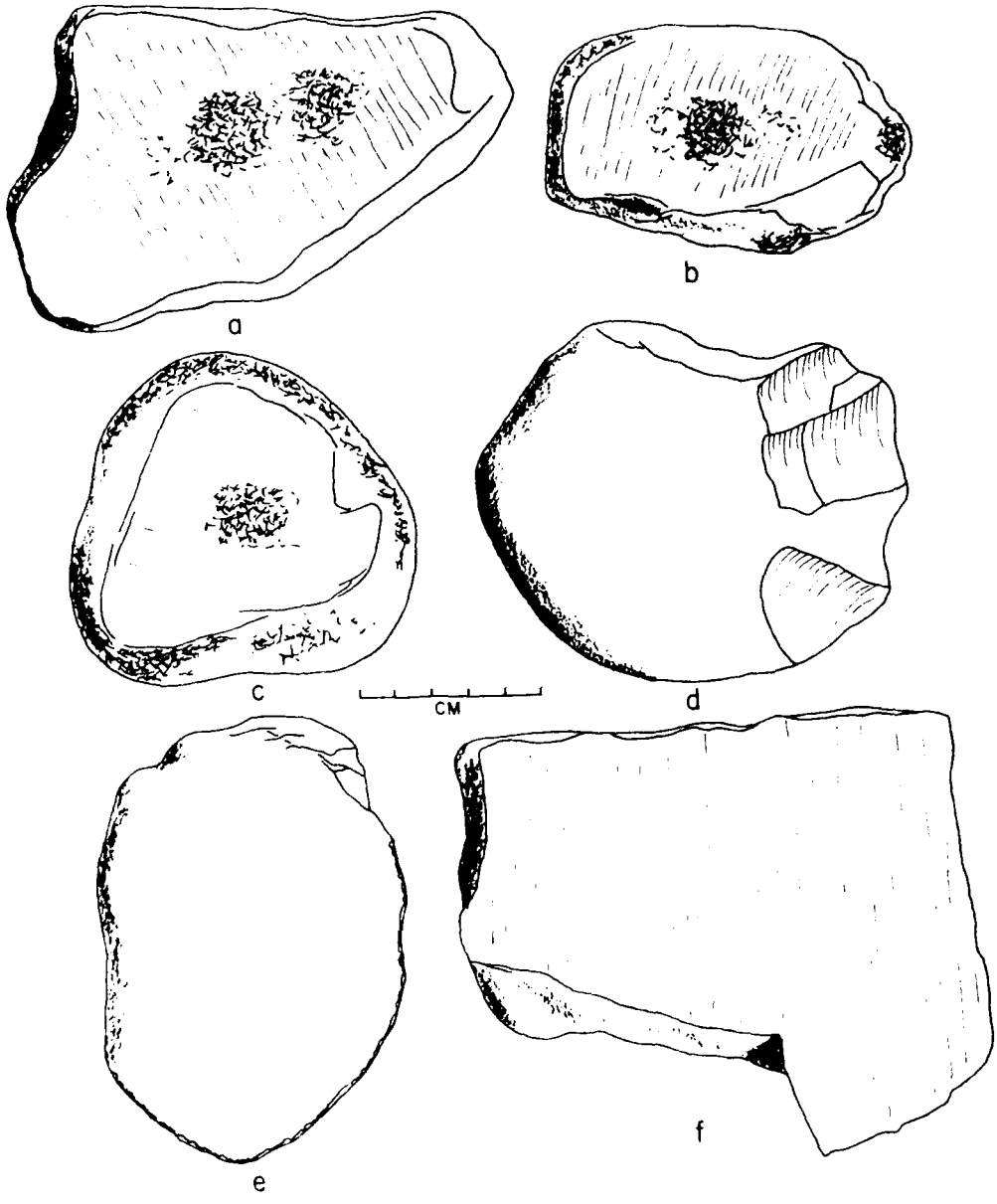

Figure 181. 23MC347. Modified Stone. (a) Group 93, (b-c) Group 96, (d) Group 104, (e) Group 107, (f) Group 110.

This site lies on the right (south) bank of the East Fork. The site lies on a low hill which slopes slowly up from the river. There is an intermittent stream to the west of the site and a broad wash to the east of the site. Slopes to the north on the river side are slow, while those to the east and west are moderate. The river originally flowed north of the edge of the site approximately 100 to 150 feet. The site is across the intermittent stream from 23MC347. The size of the site is approximately 300 feet north-south by 150 feet east-west. The elevation of the site is 770-782 feet m.s.l. The original vegetation on the site consisted of dense secondary tree growth. Visibility was very poor at the time of the original survey. The site was not discovered until after clearing when the entire surface was bare, and visibility was excellent. Material density was moderate, and the site appeared to be in a good state of preservation. Clearing of the site had disturbed the upper portion of the site, but this disturbance was confined to near the surface.

As the state of preservation appeared to be good and material density was moderate, it was decided that limited testing of the site was desirable. The physiographic setting of the site (on the south side and covered by only a shallow amount of water) was such that severe damage to the site could occur after impoundment. It was decided that a limited testing program would generate information on depth of deposits and a sample of material for density comparisons with other sites in the area. While we wished to attempt to determine the temporal placement and function of the site, it was realized that a limited testing program probably would not yield sufficient data to fulfill either of these goals.

Two, one and one-half meter squares were laid out for excavation. Both were placed near the northern edge of the site. One was placed just above the level of the floodplain near the center of the site, and the second was placed about fifty feet up slope also in the center of the site (Figure 182). As it could not be determined if the site had ever been plowed, it was decided to excavate the squares in arbitrary ten centimeter levels. Testing indicated that the area had not been plowed. A total of two, ten centimter levels were excavated below the surface. Excavations ceased at that point. Although sterile deposits had not been reached in Xu 102, unmodified stone was present at the lower edges. Sterile deposits were reached in Xu 103.

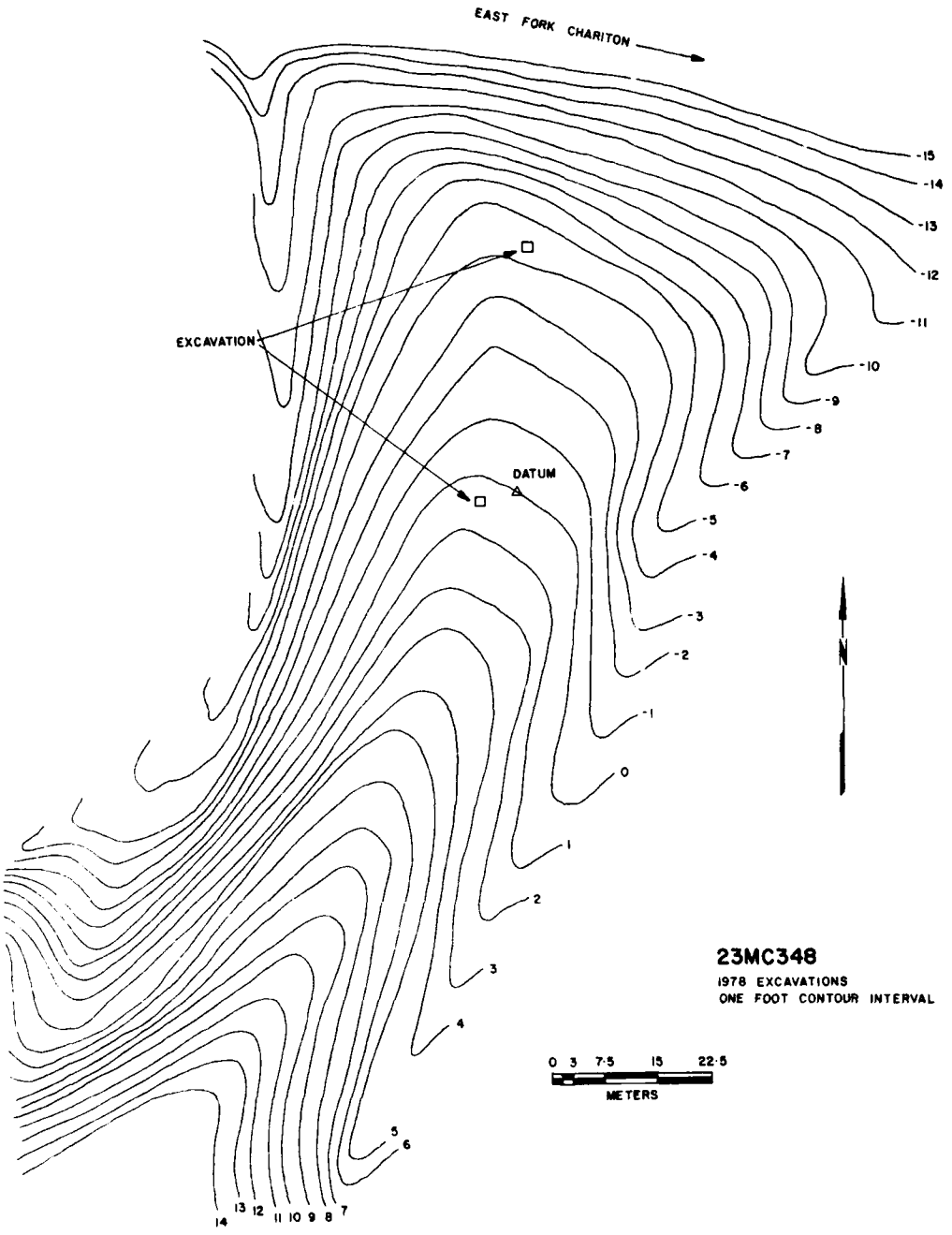

Figure 182. 23MC348. Site map and location of excavations.

The only physical stratigraphy noted in the excavations was the result of soil horizonation. An A1-horizon extended from the surface to a depth of ten centimeters below the surface. A B1-horizon extended from that point to a depth of 18 to 20 centimeters below the surface. A B2t-horizon extended for an undetermined depth below that point. Deposits were dense and uniform throughout.

Description of Materials

Points

Group 45:a Unclassified Proximal Point Fragment - 1 (Figure 183, a)

The specimen in this group is a small proximal point fragment. There is an insufficient amount of the point remaining to adquately classify it. The specimen exhibits a straight base, rounded stem-base juncture, slightly expanding stem, and a bi-convex cross-section. The chipping pattern is not possible to determine from the remaining portion. It exhibits a transverse stress fracture across the notches.

Group 47:a-b Distal Projectile Point Fragments - 2

The two specimens in this group are fragments of medium to large points. Both specimens exhibit only pressure flaking. Specimen 47:a is complete enough to determine that the chipping pattern consisted of pressure flaking only. Specimen 47:b is not complete enough to determine chipping pattern. Specimen 47:a exhibits a transverse stress fracture, and specimen 47:b exhibits a compound transverse fracture and a longitudinal percussion fracture.

Scrapers

Group 52:a Hafted Scraper - 1 (Figure 183, b)

The specimen in this group exhibits a straight base, rounded stem-base juncture, very slightly expanding stem, abrupt shoulders, and a bi-convex cross-section. It is a modified proximal point fragment. There is no longer any indication of the original chipping pattern. Some time passed between the original function and its secondary function. There is a large potlid on one face. The lower edge of this fracture was reworked. The distal working element is not distinctly convex as is typical. The working element has one straight edge and a short irregular edge.

Bifaces and Biface Fragments

Group 62:a Small Ovate Biface - 1 (Figure 183, c)

The specimen in this group is a small, thick biface. It is roughly ovate in cross-section, and it has a bi-convex cross-section. The chipping pattern consists of primary percussion flaking only. There is no edge trimming, and it still retains a sinuous edge. There is no observable wear on the edges.

Group 75:a-e Miscellaneous Thin Biface Fragments - 5

This category consists of miscellaneous thin biface fragments too small to be able to determine what kind of tool they represent. They exhibit no extenal attributes which would allow their inclusion in any other category. Chipping pattern varies considerably. Three specimens exhibit primary flaking only. One specimen exhibits primary and secondary flaking on both faces, and one specimen exhibits primary and secondary flaking on one face and primary flaking only on the other face. Two specimens exhibit transverse stress fractures, and the other three specimens exhibit a variety of compound fractures.

Group 76:a-c Miscellaneous Thick Biface Fragments - 3

This category consists of miscellaneous thick biface fragments which are too small to be able to determine what kind of tool they represent. They exhibit no external attributes which would allow their inclusion in any other category. Chipping pattern is the only noticeable difference in external attributes. Two specimens exhibit primary flaking only, and one specimen exhibits primary and secondary flaking. One specimen exhibits a transverse stress fracture, and the other two specimens exhibit miscellaneous compound fractures.

Cores

Group 77:a Chert Polyhedral Core - 1

The specimen in this group has multiple flakes removed from the margins. Flake removal is irregular, and flakes are removed from all edges. Flakes were removed by percussion. The chert quality is poor with numerous fracture planes. There is secondary cortex present on some fracture planes.

Flake Tools

Group 84:a Retouched Flake - 1 (Figure 183, d)

The specimen in this group is a chert flake altered by the removal of additional flakes. The specimen is a flake fragment and was probably a larger tool. It is not possible to adequately determine if retouch occurred before or after fracture. It exhibits unifacial-bilateral retouch which created a small, square working element. The distal end exhibits heavy wear in the form of heavy edge rounding and flake scar abrasion.

Group 86:a Utilized Flake - 1

The specimen in this group is a chert flake which exhibits use in the form of additional minute flake removal. The specimen is a slightly expanding flake with light unifacial flake removal along one entire margin. The edge is relatively acute but the unifacial flake removal tends to indicate it was used in a scraping motion.

Ground/Pecked Stone

Group 110:a Utilized Fire-Cracked Rock - 1 (Figure 183, e)

The specimen in this category is a piece of fire-cracked argillite. The specimen had been utilized after it was fire-cracked. Only one edge has been utilized. Wear consists of small flakes removed along the edge through utilization and slight edge rounding. Flake removal is bifacial and appears to have been utilized in a chopping motion.

Hematite

Group 117:a Chipped Hematite - 1 (Figure 183, f)

The specimen in this category is fragmentary, and there is only one remaining edge. The edge exhibits bifacial flaking, although almost all flakes are removed from one face. It is probable that the specimen was in a tool shaping process, but there is not enough of the specimen remaining to be certain.

Group 118:a Ground Hematite - 1 (Figure 183, g)

The specimen exhibits one face which has been lightly ground. Striations are fine and multidirectional and was ground on a fine-grained abrasive. It was apparently ground for pigment. There is no indication of a tool form.

Group 119:a Hematite Flake - 1

The specimen in this group exhibits the criteria of percussion flakes. It is an interior flake and has no cortical surface.

Lithic Waste

Group 134: Chert Waste - 417

A total of 250 unmodified chert flakes and 24 pieces of unmodified chert shatter were recovered from the excavations. Surface material included 132 unmodified chert flakes and 11 pieces of unmodified chert shatter.

Group 135: Quartzite Waste - 2

A total of two unmodified quartzite flakes were recovered from the surface.

Group 141: Fire-Cracked Rock - 2,368

Fire-cracked rock is the term utilized for thermally altered stone. A total of 2,352 pieces were recovered from the excavations, and only 16 pieces were recovered from the surface.

Group 142: Unmodified Stone - 369

The specimens in this category lack any evidence of intentional or unintentional cultural modification. These include largely residual materials which appear to have been unintentionally transported to the site.

Historic

Group 144:a-d Miscellaneous Historic Materials - 4

A total of four pieces of historic material was recovered from the first level of one excavation unit. Historic material consists of three pieces of fire-blackened ironstone, and one fragment of a pig's tooth. This material appears to be associated with the historic occupation of 23MC345H just to the west.

TABLE 98

Artifact Measurements and Attributes - 23MC348

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Points						
Unclassified Proximal Point Fragment						
45:a	Sur.	23*	14*	6*	2g*	proximal fragment
Scraper						
Hafted Scraper						
52:a	Sur.	32	30	8	8g	
Bifaces and Biface Fragment						
Small Ovate Biface						
62:a	Sur.	40	31	15	17g	
Cores						
Chert Polyhedral Core						
77:a	Sur.	38	36	29	44g	
Flake Tools						
Retouched Flake						
84:a	Sur.	17*	16*	3	1g*	
Utilized Flake						
86:a	Sur.	36	22	7	7g	1 edge
Ground/Pecked Stone						
Utilized Fire-cracked Rock						
110:a	Sur	105	105	67	855g	1 utilized edge
Hematite						
Chipped Hematite						
117:a	106	32*	27*	11*	8g*	
Ground Hematite						
118:a	104	24*	10*	5*	3g*	1 ground face

TABLE 99

DISTRIBUTIONAL SUMMARY - 23MC348

	45	47	52	62	75	76	77	84	86	110	117	118	119	134	135	141	142	144
Xu102, L.1	-	-	-	-	-	-	-	-	-	-	-	1	1	68	-	593	91	4
L.2	-	-	-	-	-	-	-	-	-	-	1	-	-	109	-	529	98	-
Xu103, L.1	-	-	-	-	-	-	-	-	-	-	-	-	-	37	-	532	58	-
L.2	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-	698	122	-
Surface	1	2	1	1	5	3	1	1	1	1	-	-	-	143	2	16	-	-

The Site Assemblage: 23MC348

The projectile point in Group 45 is too fragmentary to be considered diagnostic. It appears that the specimen was originally corner-notched, based on the flaring edges just below the fracture, but little can be said of morphology. Both this fragment and the two distal point fragments are indicative of hunting as in activity on the site. The hafted scraper in Group 52 is indicative of scraping activities on the site. Likewise, it clearly illustrates recycling of artifacts. It is a reworked proximal point fragment, and some period of time passed between functions.

The biface in Group 62 is small and relatively thick. It is questionable that it could have been a preform for another tool, and its thickness was probably the reason for discard. The biface fragments in Groups 75 and 76 are typical of almost all sites in the area and illustrates the long use-life of tools until too highly fragmentary to be of further utility. The small polyhedral core in Group 77 indicates a limited use of local sources of raw materials.

The retouched flake in Group 84 is of unknown function. The morphology of the working element is unique. It exhibits heavy edge damage along the distal end of the small squared working element. Although it may have been used as an incising tool, its function is still unknown. The utilized flake (Group 86) exhibits an acute edge, but edge damage indicates it was used as a scraping tool.

The utilized piece of fire-cracked rock (Group 110) is an incidental tool. Flake removal from the edge is bifacial and indicates that the tool was used in a chopping motion. The most apparent difference between this assemblage and a large number of other sites in the area is the lack of ground and pecked stone connected with plant processing. Seasonal sites in the area have very high ratios of plant processing tools to hunting tools. This is especially apparent since the site just across the intemittent stream to the west (23MC347) contains large numbers of plant processing tools. The chipped hematite (Group 117) is a small fragment but was probably being shaped for a tool. The ground hematite specimen (Group 116) was ground for pigment as there is no indication of a tool form.

The remainder of the materials are lithic waste or unmodified stone. The densities of chert waste (Group 134) and quartzite waste (Group 135) are high, especially for sites which exhibit indications of hunting and related activities only. Chert waste indicates both tool

manufacture and tool maintenance. Chert flakes are dominated by biface thinning, trimming, and retouch flakes. The densities of fire-cracked rock are also very high. This indicates that thermal activities involving heat retention (especially cooking) was an important activity. The numbers of unmodified stone are also high but appear to be materials unintentionally transported to the site as the glacial till in the area is relatively stone free.

In summary, activities indicated by the recovered tools include hunting, scraping, chert reduction, incidental tool use, hematite working, pigment production, tool production and maintenance, and thermal activities. Subsistence activity indicators reveal that hunting was the only activity. There was no indications of plant processing. This indicates that, unlike other sites, this site does not represent a fall seasonal site. There is, however, no clear indication of seasonality.

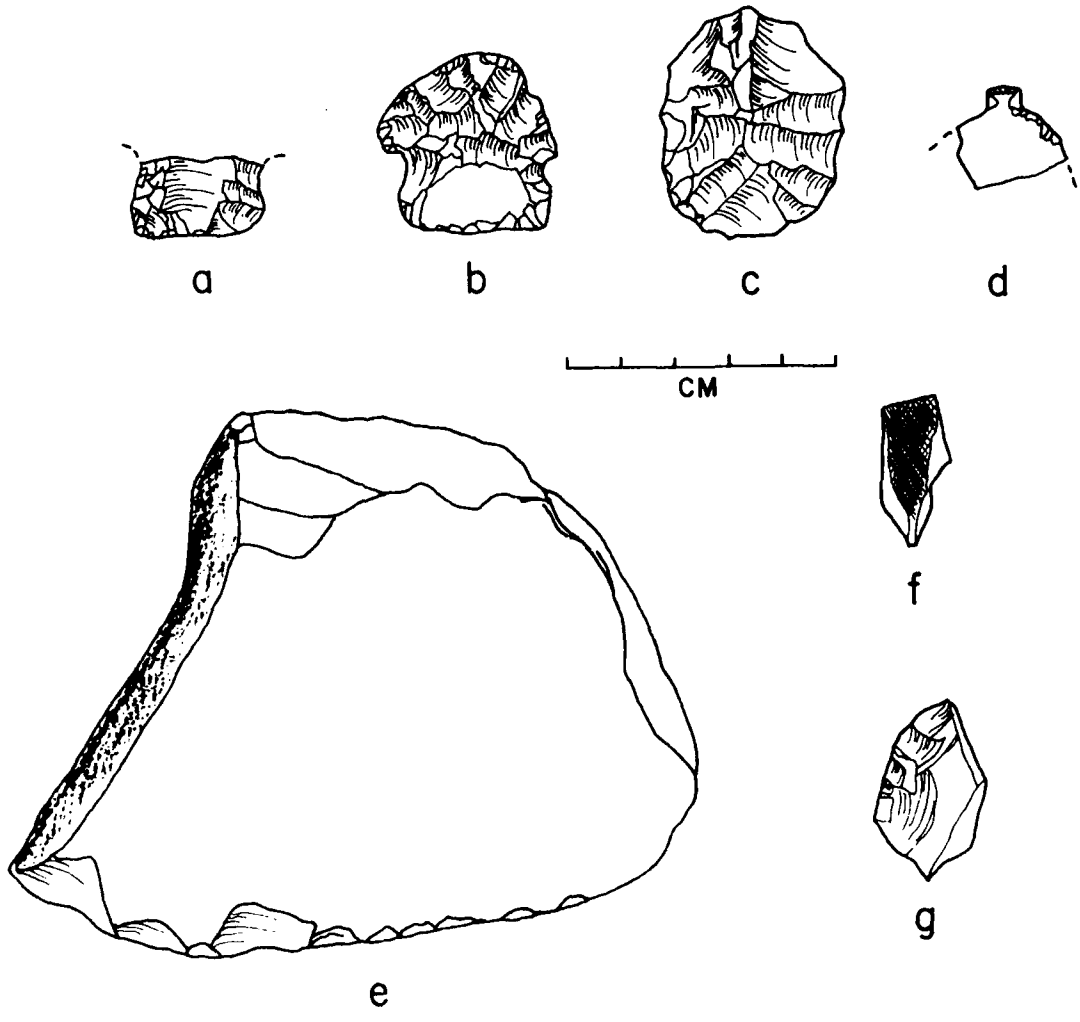

Figure 183. 23MC348. Artifacts. (a) Group 45, (b) Group 52, (c) Group 62, (d) Group 84, (e) Group 110, (f) Group 117, (g) Group 118.

This site is located on the right (west) bank of the East Fork. The site lies in the floodplain of the East Fork at entrance of an intermittent stream into the floodplain. The site was not present on the surface and is buried at an unknown depth. The river originally flowed approximately 250 feet south of the site. The size of the site could not be determined. As the site is buried, elevation could not be determined. The elevation of the surface of the floodplain in the site area is approximately 768-770 feet m.s.l. The vegetation in the site area was grass at the time of the original survey. Visibility was poor at that time. The site was not discovered until after clearing. A large tree disposal pit was dug into the site, and material was discovered from the tree disposal pit only. Although the entire area had been cleared and was bare, material was recovered from the pit surface only indicating that the site is buried. Material density on the pit surface was high. The tree pit was approximately 100 feet long, twelve feet wide, and eight feet deep. It is estimated that removal of this material and refilling of the pit would have highly intermixed materials. It would thus appear that artifact density in the buried component is very high. It is not possible to estimate the state of preservation of the site. Certainly, a large portion of the site has been destroyed, but the original size of the site is unknown and the remaining portion is unknown. The impacts to the site after impoundment are unknown. As the component is buried, it was doubtful that future impacts would destroy the site.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS

Convex-based, Expanding-stemmed Point (Figure 184, a)	1
Straight-based, Expanding-stemmed Point (Figure 184, b)	1
Contracting-stemmed Point (Figure 184, c)	1
Straight-based, Side-notched Points (Figure 184, d-f)	1, 2 proximal fragments
Medium, Triangular Point (Figure 184, g)	1
Shallow Side-notched Point (Figure 184, h)	1
Unclassified Proximal Point Fragment	

(Figure 184, i)	1
Distal Projectile Point Fragments	4
Projectile Point Shoulder Fragment	1
Thin Chert Biface Fragments	12
Thick Chert Biface Fragments	3
Miscellaneous Worked Chert	1
FLAKE TOOLS	
Utilized Flake	1
CORES	
Chert Polyhedral Cores	2
Quartzite Polyhedral Core	1
Chert Nuclei	5
Chert Core Fragments	10
GROUND/PECKED STONE	
Pecked or Pitted Stone (Figure 185, a-f)	6
Ground Stone (Figure 186, a-d)	4
End Battered Cobbles (Figure 187, a-f)	8
Pecked and Battered Stone (Figure 188, a-f)	9
Pecked and Ground Stone (Figure 186, e)	1
Ground and Battered Stone (Figure 186, f)	1
Ground, Pecked, and Battered Stone (Figure 189, a-f; Figure 190, a-c)	11
Quartzite Metate (Figure 191, a)	1
Metate Fragment/Chipped Cobble (Figure 191, b)	1
Chert Core Hammerstone (Figure 190, d)	1
Ground Sandstone (Figure 190, e)	1
Split, Chipped, and Battered Stone (Figure 190, f)	1
HEMATITE	
Ground Hematite	1
Chipped Hematite	1
Fire-cracked Hematite	1
LITHIC WASTE	
Chert Flakes	148
Chert Shatter	40
Quartzite Flakes	4
Quartzite Shatter	1
Quartz Flake	1
Silicified Sediments Flake	1
Chert Raw Material	4
Fire-cracked Rock	184

Most of the projectile points are indicative of an Archaic occupation. Both of the expanding-stemmed points belong to the Late Archaic period. Expanding-stemmed forms are common in northeastern Missouri on the Late Archaic sites. The straight-based, expanding-stemmed forms are dominate in assemblages in the Cannon reservoir (Klippel 1968; Teter and Warren 1979:239). They occur as elements on Late Archaic sites throughout central Missouri (Chapman 1975; Henning 1961:Fig. 28; Chomko 1976:Fig. 17).

The contracting-stemmed point is not generally diagnostic. Although more common on Woodland sites (Grantham 1977:76-77), they appear on Archaic sites as well (cf. Ahler 1971:15). The side-notched points are the most common elements on Early/Middle Archaic sites throughout northern Missouri. They are common in such contexts in the Cannon reservoir area (Teter and Warren 1979:239-240) as well as in the Long Branch area (Grantham 1977, 1979). The remainder of the projectile points are not particularly diagnostic.

The ground and pecked stone is numerous on the site. As with most of the seasonal sites in the area, the tools indicative of economic activities are dominated by plant processing. Most of these tools are heavily used. It is probable that the site was repeated occupied as the tools are far more heavily used than almost all sites in the area.

The number of flake tools is surprising low. The ground heamtite was ground for pigment. The chipped hematite is irregular, and the reason for chipping is unknown. They do, however, indicate at least two uses for hematite.

The chert waste is dominated by bifacial thinning, trimming, and retouch flakes. There is, however, a higher use of local sources of raw material than on a number of sites in the area. The fire-cracked rock is indicative of use of stone for heat retention in thermal activities.

The amount of material recovered is extremely high considering the circumstances of recovery. Material was recovered from the surface of a tree disposal pit only. Likewise, its physiographic location (in the floodplain) is relatively unique. Only one other fall seasonal site in the floodplain has been recorded. The projectile points recovered indicate both Early/Middle Archaic and Late Archaic components as well as possible later components.

The large number of plant processing tools indicate that plant processing was the most important subsistence activity. The heavily used state of almost all tools indicates repeated occupation of the site.

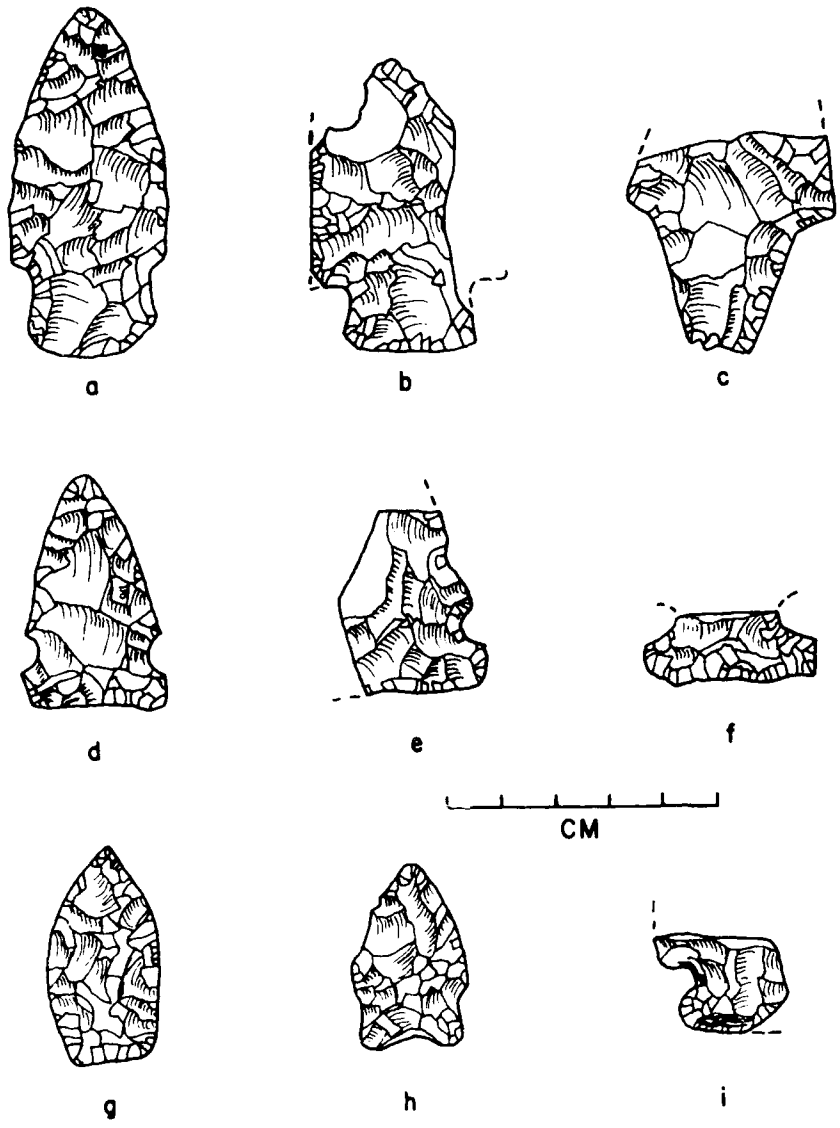

Figure 184. 23MC349. Artifacts. (a) Convex-based, Expanding-stemmed Point, (b) Straight-based, Expanding-stemmed Point, (c) Contracting-stemmed Point, (d-f) Straight-based, Side-notched Points, (g) Triangular Point, (h) Shallow Side-notched Point, (i) Unclassified Proximal Point Fragment.

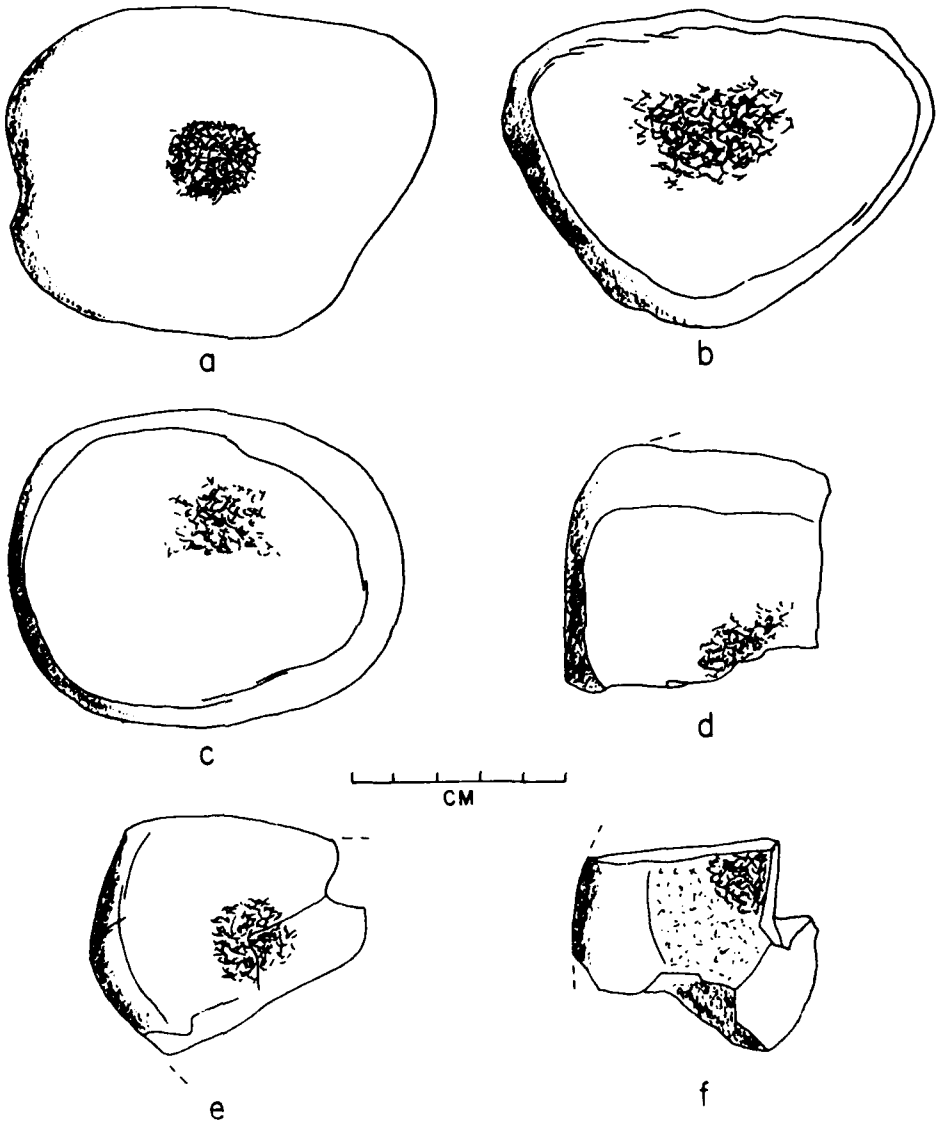

Figure 185. 23MC349. Artifacts. (a-f) Pecked or Pitted Stone.

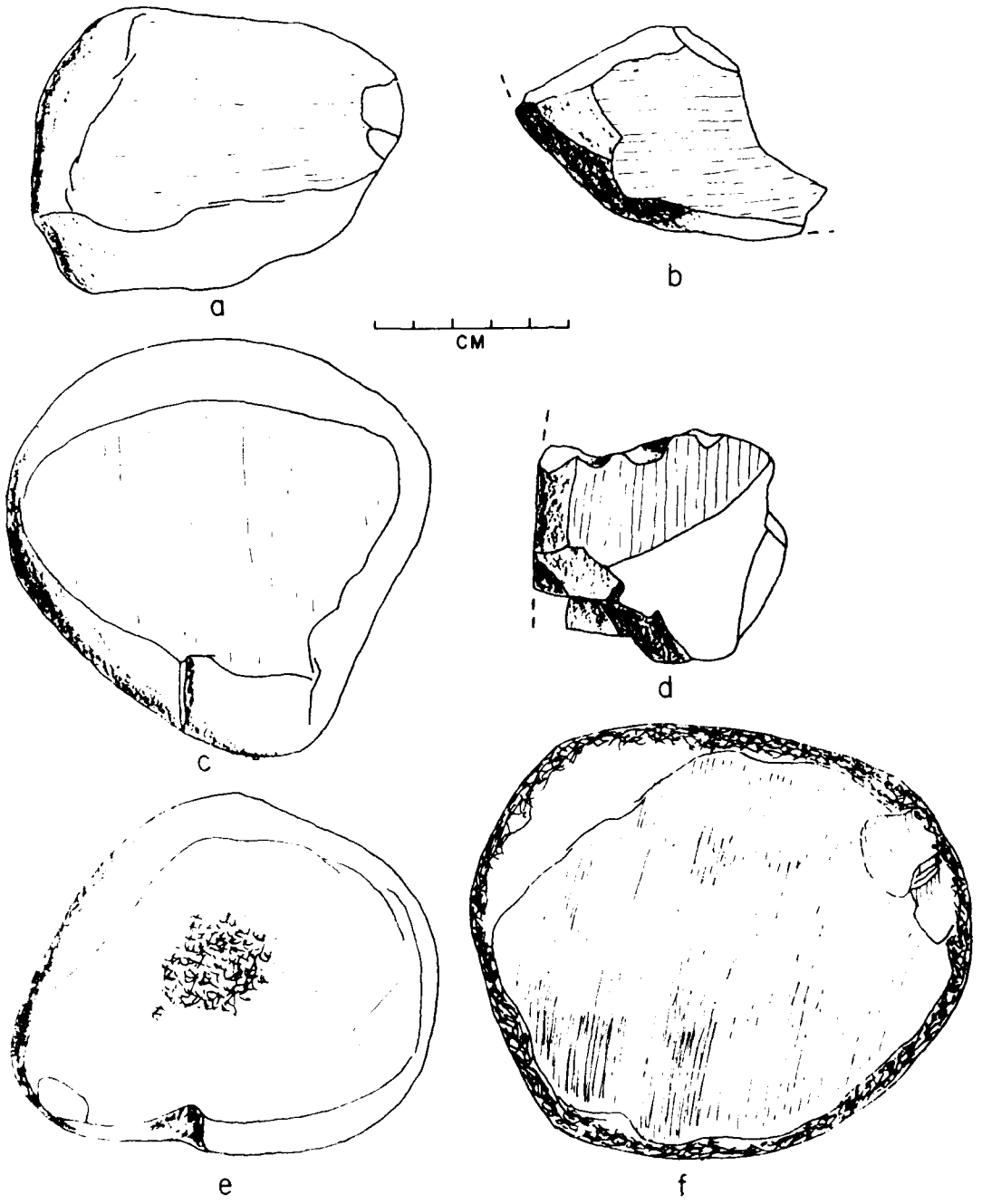

Figure 186. 23MC349. Artifacts. (a-d) Ground Stone, (e) Pecked and Ground Stone, (f) Ground and Battered Stone.

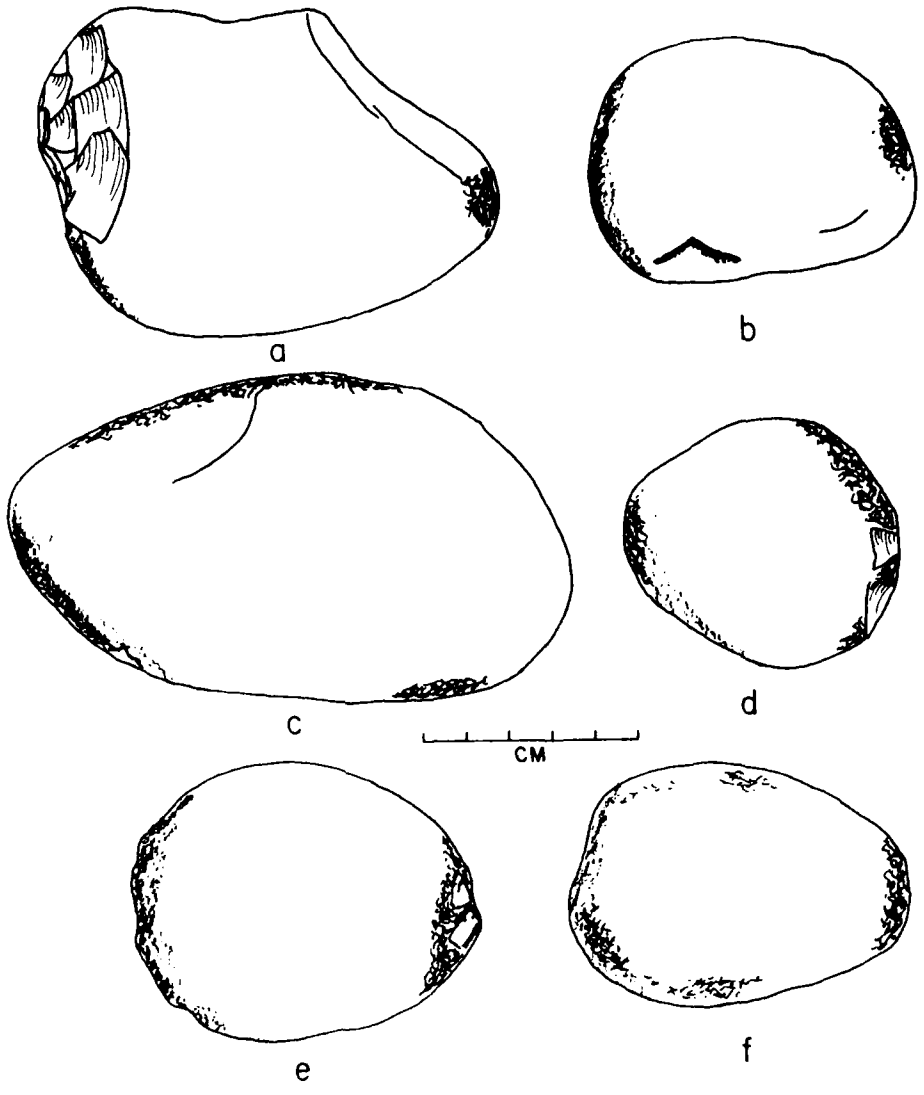

Figure 187. 23MC349. Artifacts. (a-f) End Battered Cobbles.

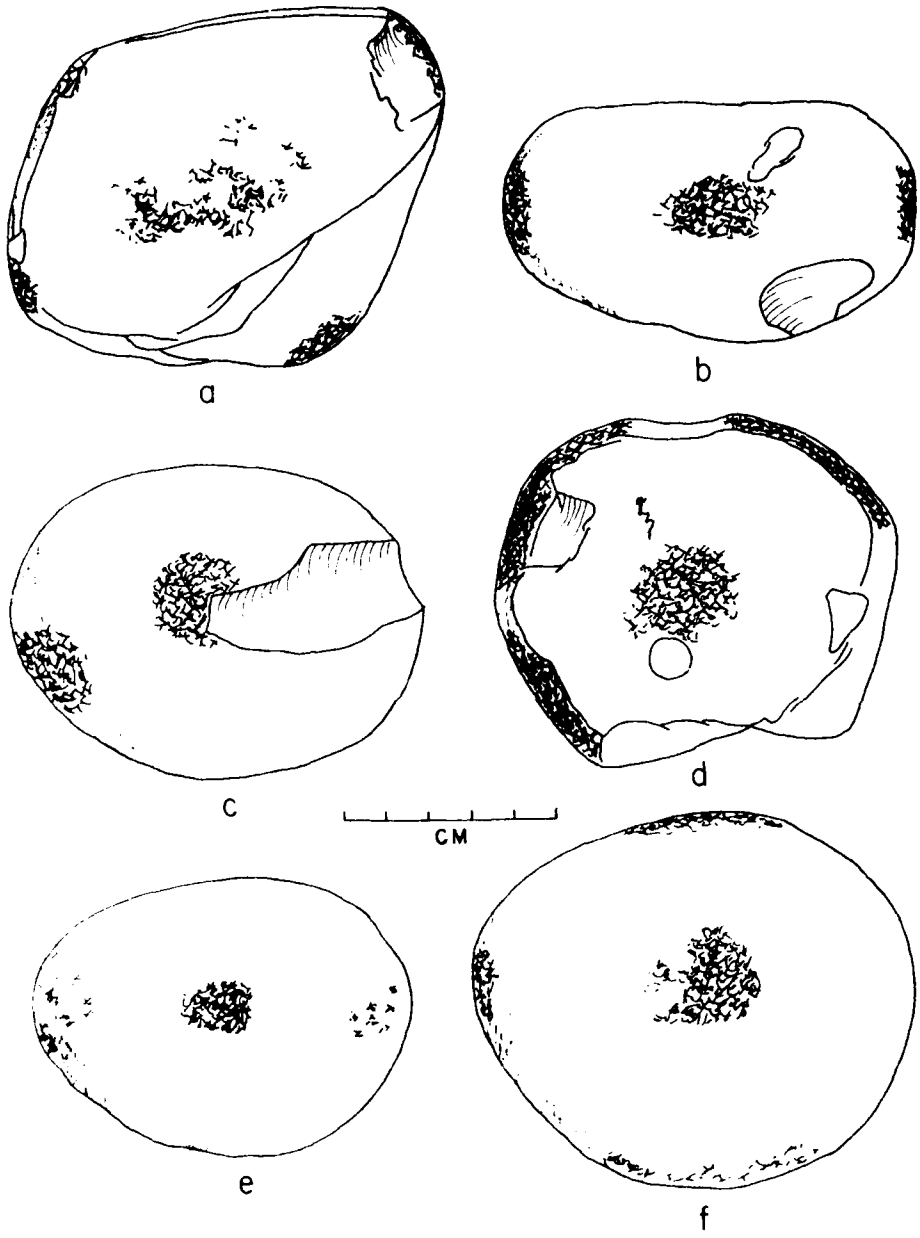

Figure 188. 23MC349. Artifacts. (a-f) Pecked and Battered Stone.

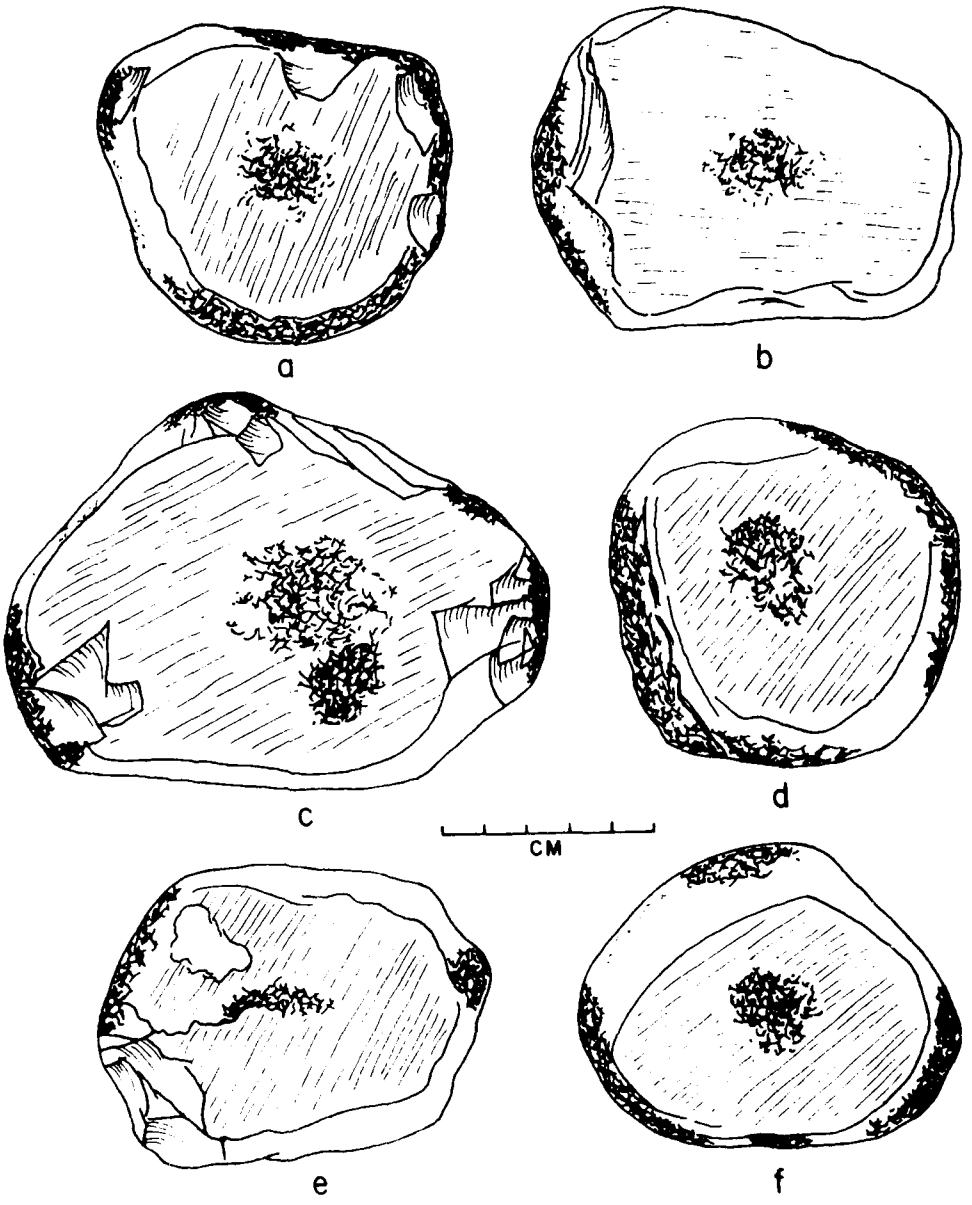

Figure 189. 23MC349. Artifacts. (a-f) Ground, Pecked, and Battered Stone.

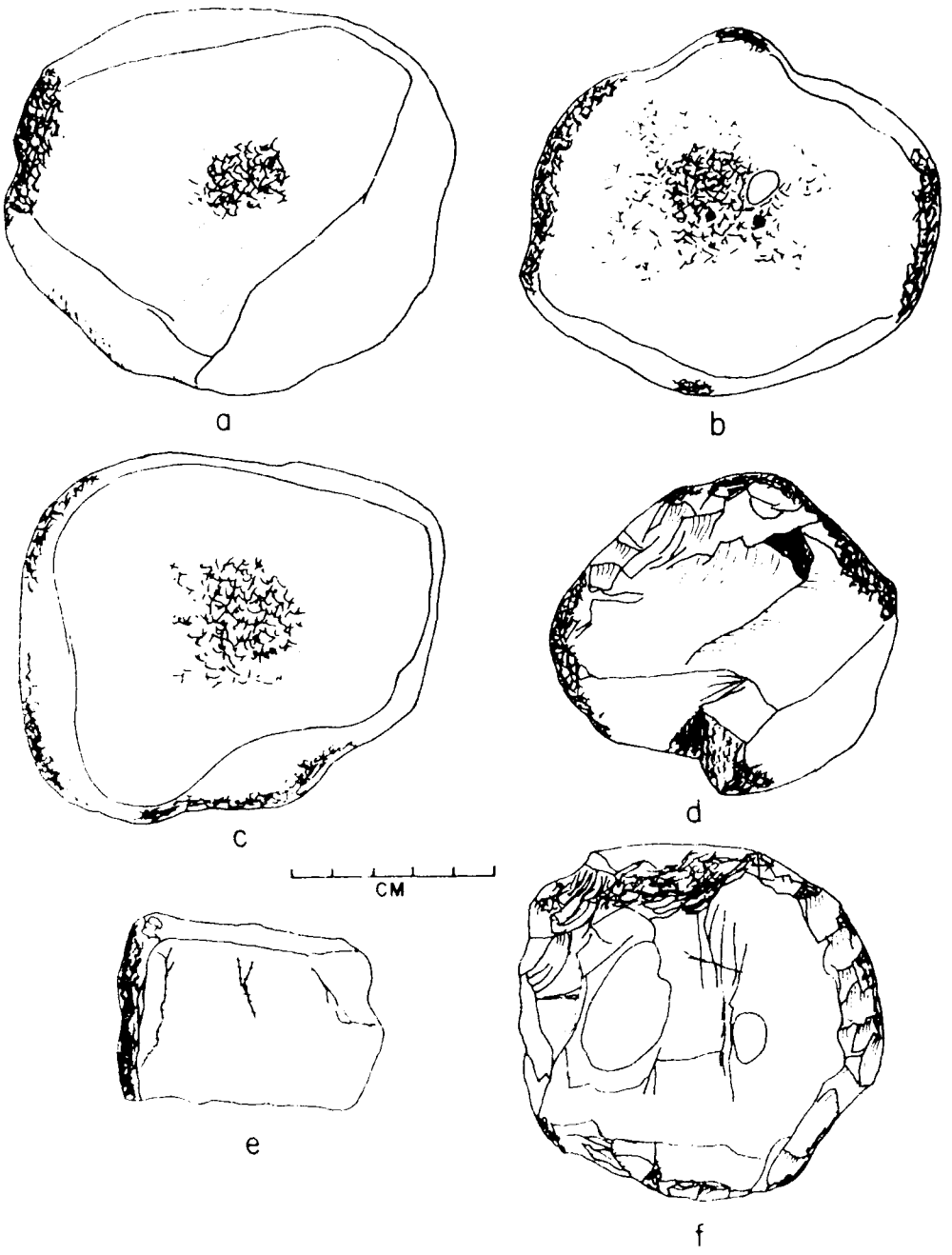

Figure 190. 23MC349. Artifacts. (a-c) Pecked and Battered Stone, (d) Chert Core Hammerstone, (e) Ground Sandstone, (f) Split, Chipped, and Battered Stone.

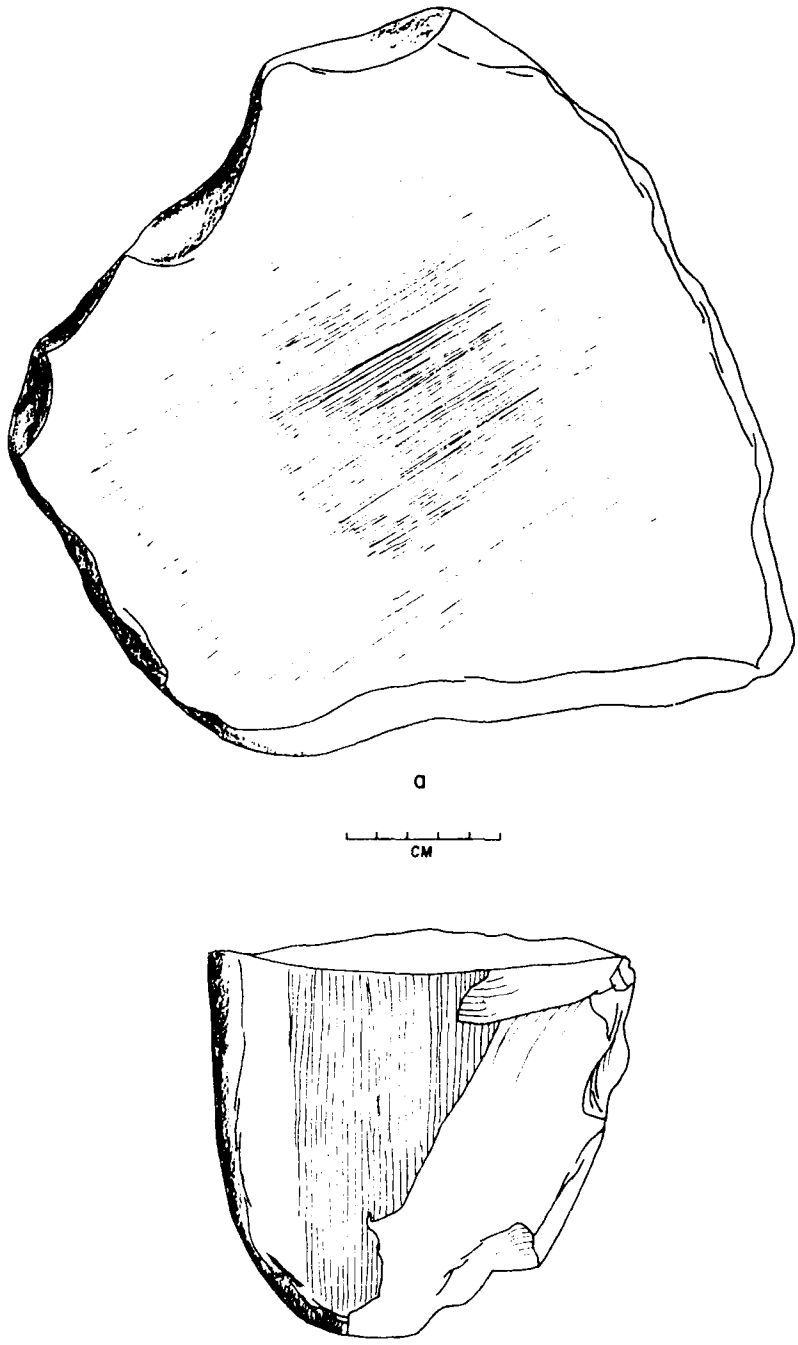

Figure 191. 23MC349. Artifacts. (a) Quartzite Metate (b) Metate Fragment/Chipped Cobble.

This site is located on the right (north) bank of an intermittent stream. The site lies on a long, relatively flat hill. Slope aspect is southwest. The intermittent stream flows along the eastern and southern edges of the site. There is a broad deep wash to the west which separates the site from 23MC90 to the west. Hill slopes are moderate to the south; relatively steep to the east and west. Material was collected from near the edge of the intermittent stream almost all the way up the hill. The size of the site is approximately 150 feet north-south by 80 feet east-west. The elevation of the site is 770-790 feet m.s.l. The original vegetation on the site was trees, and visibility was poor at the time of the original survey. Although the area was shovel tested at that time, no material was recovered. The site was not discovered until the reservoir clearing was complete. The area of the entire hill was bare, and visibility at that time was excellent. Material density was moderate. The depth of the site was relatively shallow based on apparent damage to the site during clearing. Portions of the site had been heavily disturbed during clearing, but portions of the site were still in a fair state of preservation.

As the site was apparently relatively shallow, it was decided that testing would not be profitable. The site lies on the east side of the reservoir but is sheltered from wave action by 23MC90 to the west. While erosion will occur from undercurrents by downward drainage of the intermittent stream, it was anticipated that the site will not be destroyed by the reservoir.

One fire-cracked rock feature was exposed on the surface. The feature consisted of a concentration of heavily fire-reddened micaceous sandstone. There was no charcoal or ash exposed in the area of the feature. Although clearing had slightly dispersed the stone, the concentration of rock was still clearly identifiable. This type of feature is common in the area (cf. 23MC74 - Grantham 1979). They all appear to represent shallow earth ovens. The fire-cracked rock features occur in all states of preservation from tightly compacted (cf. 23MC58 - Grantham 1979) to loosely concentrated (cf. 23MC74 - Grantham 1979). The feature was not excavated but was photographed and sketched on the site map. As no charcoal was apparent, excavation of the feature would not have yielded new information or helped place the site temporally.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Reworked, Convex-based Projectile Point (Figure 192, a) 1
- Chert Drill - Medial Fragment (Figure 192, b) 1
- Thin Chert Biface Fragments 4
- Thin Broad Biface with Square Base - Proximal Fragment (Figure 192, d) 1
- Thin Broad Biface with Rounded Base - Proximal Fragment (Figure 192, e) 1
- Miscellaneous Worked Chert 1

FLAKE TOOLS
- Flake Perforator (Figure 192, c) 1
- Retouched Flakes 4
- Utilized Flakes 2

CHERT CORES
- Chert Polyhedral Cores (Figure 192, f-g) . . . 2

GROUND/PECKED STONE
- Abraded Sandstone (Figure 192, h) 1

LITHIC WASTE
- Chert Flakes 120
- Chert Shatter 11
- Quartzite Flake 1
- Quartzite Shatter 3

The reworked, convex-based point appears to be a Middle Woodland type. The type is closest to Manker Notched (cf. White 1968). Similar corner-notched point are relatively common in northern Missouri (Chomko and Griffin 1975:Fig. 3, a; Vehik 1971:Fig. 3, k; Henning 1961:140; Shields 1966b:115; and Eichenberger 1944). In the Kansas City area (Shippee 1967) similar material occurs on Middle Woodland sites and possibly extends into the Late Woodland. White (1968) indicates a range of approximately 250 B.C. to A.D. 250 in the Illinois River valley. Bell (1976:34) indicates a range of about A.D. 100-350 from the Trowbridge site in the Kansas City area. A single projectile point is not a good basis for assigning components on a site, and the reworked nature of the point makes such an assignment even more tenuous.

The chert drill fragment and flake perforator indicate that drilling or reaming activities were relatively more important than on a number of sites in the area. Both the rounded and square-based biface fragments lack any obsevable wear and are probably blank or preform fragments. Both the number of biface fragments and miscellaneous worked chert indicate the general scarcity of chert. Biface fragments are always numerous and indicate a long use-life for tools. The attempts to work even blocky chert is not characteristic of areas where chert is more abundant.

The flake tools are incidental tools, but are not as numerous on this site as on other sites in the area (cf. 23MC142, this volume). The type of retouch and utilization on flakes indicates that scraping activities were dominant. The chert cores indicate the use of local sources of raw materials.

The piece of abraded sandstone was used to sharpen narrow, pointed objects (e.g. awls). One of the most obvious characteristics of the recovered materials is the lack of ground and pecked stone tools associated with plant processing. Such tools are common on almost all sites in the area.

The chert waste is typical of most of the sites in the area. Flakes are characterized by a majority of flakes which are biface thinning, trimming, and retouch flakes. The percentages of local and non-local cherts was not calculated. The presence of quartzite flakes and shatter does indicate the use of local sources of raw material. Fire-cracked and burned stone was abundant on the site, but these materials were not collected. Most of the burned stone was micaceous sandstone, and almost all of the stone in the fire-cracked rock in the feature noted on the surface was that type.

The site is substantially different from most of the sites in the area. Most of the tools recovered can be associated with hunting than other site types. Activities indicated are hunting, drilling/reaming, scraping, cutting, simple grinding, and chert reduction. While most of these activities can be associated with hunting, the presence of scattered fire-cracked rock and concentrated in features differs significantly from other sites in the area interpreted as largely oriented towards hunting (cf. 23MC66 - Grantham 1979:282-302). The duration of occupation is interpreted as longer than most of the sites indicative of hunting camps.

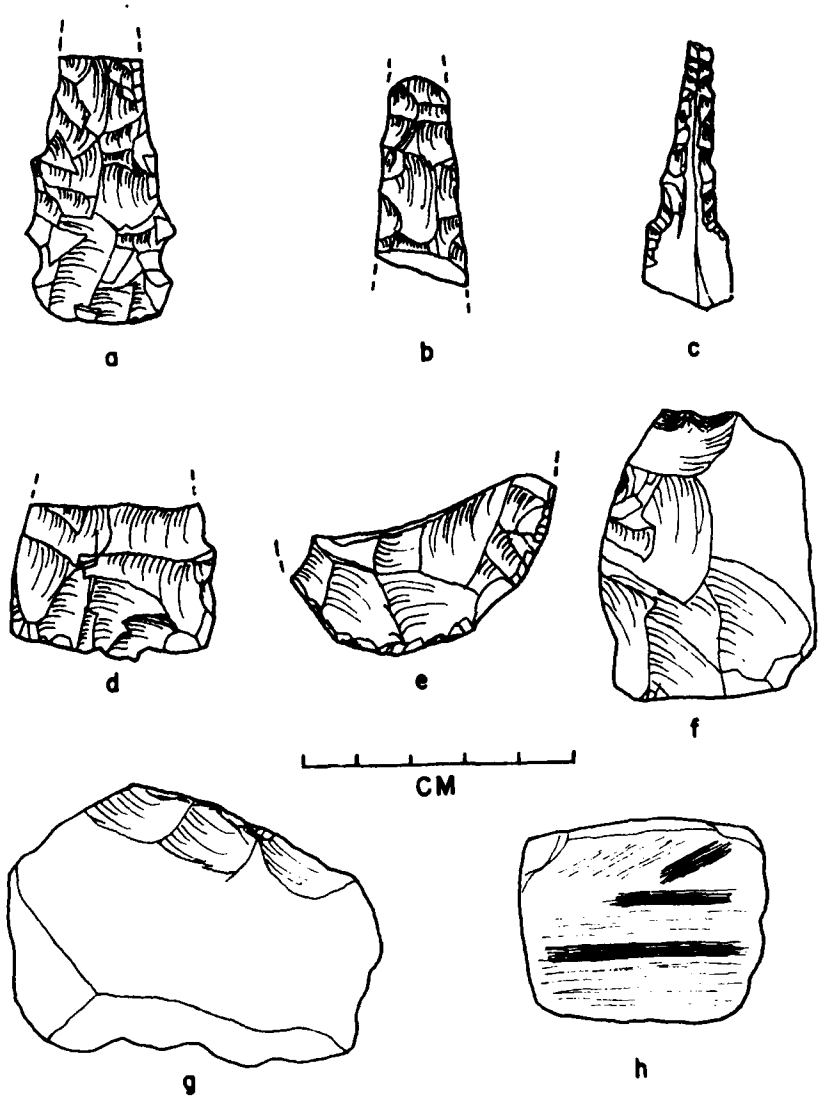

Figure 192. 23MC350. Artifacts. (a) Reworked projectile point, (b) Medial drill fragment, (c) Flake perforator, (d) Square-based biface fragment, (e) Rounded-based biface fragment, (f-g) Chert polyhedral cores, (h) Abraded sandstone.

This site is located on the left (east) bank of the East Fork. The site is located in the floodplain of the East Fork. It lies on the interior of a small old meander loop of the river and at the southern edge of a large old meander loop. The site was originally located along the old natural river levee. The size of the site could not be determined. The elevation of the site is approximately 783 feet m.s.l. The vegetation on the site was originally grass with a narrow gallery forest. Visibility at the time of the original survey was poor. The site was not discovered until after clearing when the entire surface was bare. The clearing contractor had cut off the old meander loop to the north and used the old channel for tree disposal. Trees were placed in the old channel, and the edges of the old channel pushed in to cover the trees. Approximately 30 to 45 centimeters of materials were removed from the edges of the channel. This had exposed material along the southern edge of the meander loop. The site was originally buried, and it appears that only a very small part of one edge of the site has been exposed. The size of the site and the state of preservation could not be adequately estimated. The exposed surface indicates about one and one-half feet of recent dark brown deposits overlying a well-developed soil, which appears to be an old river levee remnant. As only a small part of this well-developed soil was exposed, the nature of its origin is still uncertain.

MATERIAL COLLECTED

PREHISTORIC

GROUND/PECKED STONE
- Pecked and Ground Stone (Figure 193, a). 1

LITHIC WASTE
- Chert Flakes 9
- Quartzite Shatter. 1
- Fire-cracked Rock. 2

The sample size from this site is far too small to make any meaningful statements. The ground and pecked stone is indicative of plant processing activities, but we have no indication of its relative importance in the subsistence economy. The remainder of the materials are waste. Chert flakes and quartzite shatter are indicative of lithic

reduction, and the fire-cracked rock indicates the use of stone for heat retention in thermal activities. A relatively small amount of the site was exposed, and we have no indication of the temporal placement or site function.

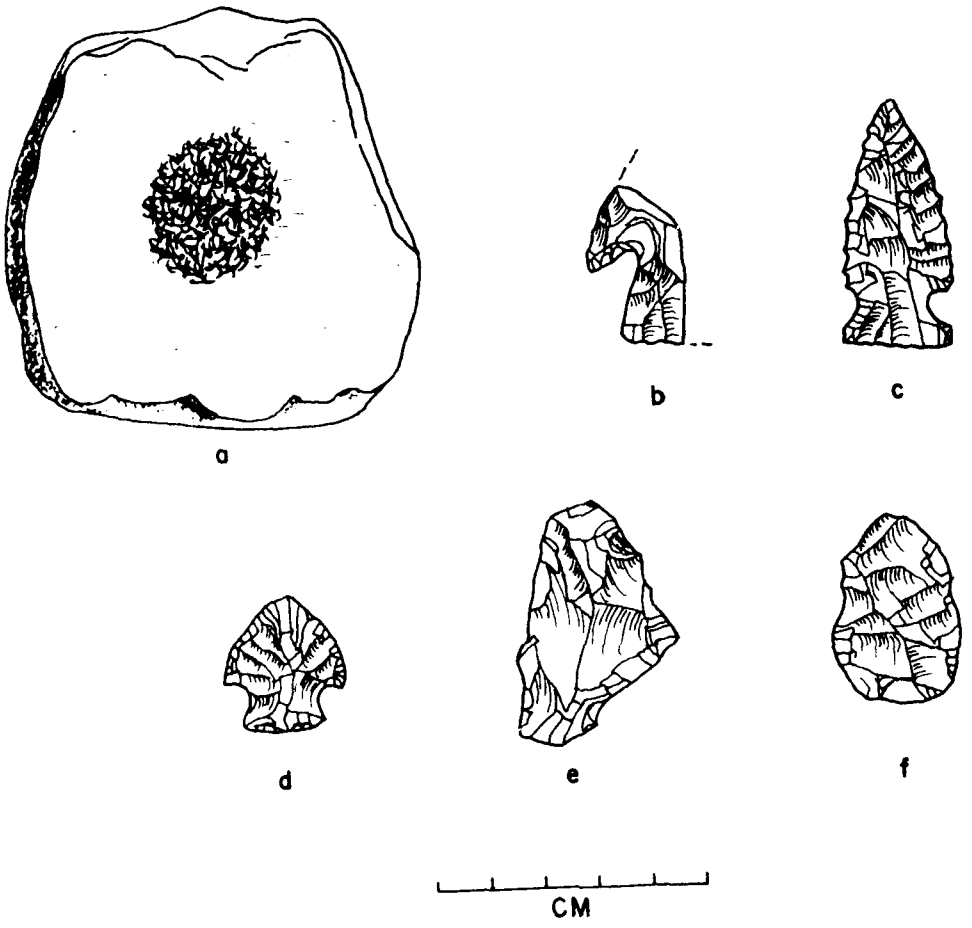

Figure 193. 23MC351 and 23MC353. Artifacts. (a) 23MC351 - Pecked and Ground Stone, (b) 23MC353 - Large Stemmed Point, (c) Medium Side-notched Point, (d) Small Corner-notched Point, (e) Small Asymmetrical Biface, (f) Small Ovate Biface.

23MC352

This site lies on the left (north) bank of the East Fork. The site lies in the floodplain of the East Fork. The site lies just west of the juncture of an intermittent stream and south of 23MC116. The river originally flowed immediately south of the site, and the site lies between the base of the hill of 23MC116 and the river. The size of the site could not be determined. The site was apparently buried. The elevation of the site was not determined, although the surface of the floodplain in the site area is ca. 793 feet m.s.l. The area was in grass at the time of the initial survey, and visibility was poor. The site was not discovered until after the reservoir clearing when a tree disposal pit was dug on the site. Material was recovered from the surface of the pit after filling. It was not determined how deeply buried the site was. Material density was moderate, although mixing of materials when the pit was filled makes it difficult to adequately assess material density. As the site is buried and material was recovered only from the surface of a tree disposal pit, it is difficult to determine how much, if any, of the site remains intact. Certainly, a large percentage of the site has been destroyed by the tree pit.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Distal Projectile Point Fragment (Figure 194, a) 1
- Distal Biface Fragment (Figure 194, b) . . . 1
- Miscellaneous Worked Chert 1

FLAKE TOOLS
- Flake Scraper Fragment (Figure 194, c) . . . 1
- Utilized Flake 1

GROUND/PECKED STONE
- Pecked Stone (Figure 194, d-f) 3
- Ground and Battered Stone (Figure 194, g) 1

LITHIC WASTE
- Chert Flakes 18
- Chert Shatter 2
- Fire-cracked Rock 13

None of the material recovered is considered temporally diagnostic. The distal projectile point fragment indicates that hunting was an activity on the site, but the small sample size does not give us any indication of its relative importance in the economy. The distal biface fragment appears to be a fragment of a preform. The specimen exhibits little or no wear. The miscellaneous worked chert is a roughly worked piece of irregular tabular chert. The flake scraper fragment is indicative of another function on the site. The utilized flake appears to have been used as a cutting tool.

Both the pecked stones and the ground and battered stone are part of plant processing activities. Although their number is considerably higher than tools indicative of hunting, the small sample size makes it difficult to adequately ascertain their relative importance.

The sample of chert waste is relatively small but is characterized by a majority of biface thinning, trimming, and retouch flakes. The fire-cracked rock indicates that thermal activities involving heat-retention occurred on the site, but the disturbed nature does not allow us to determine or make any assessment of their associations.

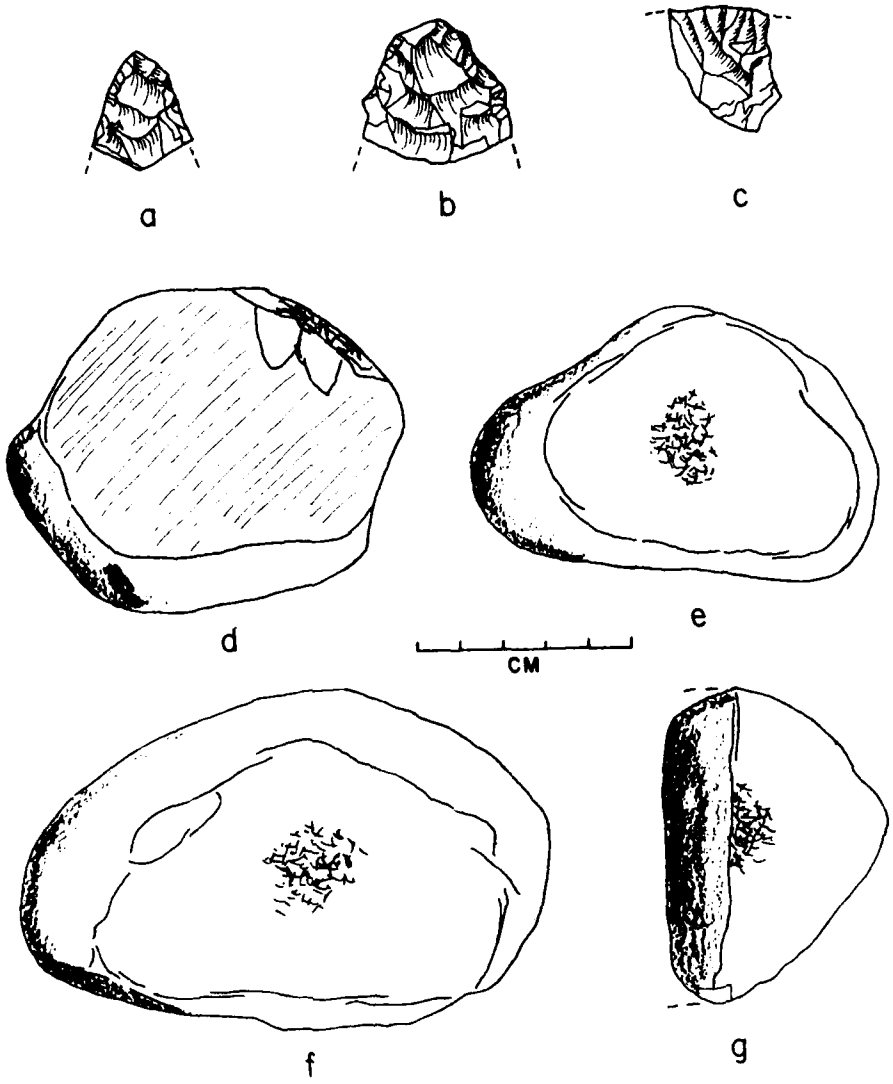

Figure 194. 23MC352. Artifacts. (a) Distal Projectile Point Fragment, (b) Distal Biface Fragment, (c) Flake Scraper Fragment, (d-f) Pecked Stone, (g) Ground and Battered Stone.

23MC353

This site is located on the left (east) bank of the East Fork. The site lies on a high, steep hill overlooking the river. There are deep draws to both the north and south of the site. Slope aspect is west. Hill slopes are steep on all sides. The river originally flowed along the base of the hill on the west. The size of the site could not adequately be determined. The elevation of the site is 790-810 feet m.s.l. The vegetation on the site was originally forest, and visibility was poor at the time of the original survey. Although the hill was shovel tested, no material was recovered at that time. The site was not discovered until after the reservoir clearing. The lower slopes of the hill were cleared and bare. Material was recovered only from the extreme western edge of the site. There was a scraped area approximately fifty feet by thirty feet, and all of the material recovered came from this area. Material density appeared to be moderate. The bulk of the site area is still probably in a good state of preservation. As the site was still largely in forest, it is impossible to determine how much of the site remains. The cleared area on the western edge has been heavily disturbed, if not destroyed.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS

Large Stemmed Point with Oblique Shoulders-Lateral Fragments (Figure 193, b)	1
Medium Side-notched Point (Figure 193, c)	1
Small Corner-notched Point (Figure 193, d)	1
Distal Projectile Point Fragment	1
Small Asymmetrical Biface (Figure 193, e)	1
Small Ovate Biface (Figure 193, f)	1
Thin Chert Biface Fragment	1

FLAKE TOOLS

Retouched Flakes	1
Utilized Flakes	3

LITHIC WASTE

Chert Flakes	87
Chert Shatter	4
Quartz Shatter	2

Little comparable material was found for any of the projectile points. The large stemmed point exhibits some affinities for Archaic types, but there is an insufficient amount of the specimen remaining to make meaningful comparisons. Likewise, finding comparable material for the side-notched point is difficult. Similar material was not encountered in the literature. Based on chipping pattern (pressure flaking only) it is believed that the speicmen belongs to the late Middle Woodland/Early Late Woodland. There is not, however, sufficient comparable material to clearly determine that this is true. The small corner-notched specimen appears to be closest to the type Koster Corner-notched (Perino 1971a:100) although it does not closely fit the type definition. This form is common in northeastern Missouri (Eichenberger 1939, 1944, 1956: Henning 1961; and Hunt 1976). It is common in Late Woodland contexts in this area.

The small ovate biface and the asymmetric biface exhibit little or no wear on the margins, and both appear to be preforms. The retouched flake and two of the utilized flakes were used for cutting activities. Only one utilized flake was used in scraping activities. The lack of recovered ground and pecked stone is noteworthy.

The remainder of the materials are lithic waste. The chert flakes are indicative of tool manufacture and maintenance. Flakes are dominated by bifacial thinning, trimming, and retouch flakes. The fire-cracked rock is indicative of the use of stone for heat retention in thermal activities. The tools indicative of economic activities reveal that hunting dominated with no evidence of plant processing.

This site lies on the left (south) bank of an unnamed intermittent stream. The site lies on a low, relatively flat end of a dissected hill slope. It lies approximately 400 feet east of the juncture of the small intermittent stream with the East Fork. The site lies only about four feet above the level of the bed of the intermittent stream. The site is well protected on the north and south by high hills. The site lies upstream and across from 23MC325. The size of the site was not determined but is estimated to be approximately 100 feet east-west by 70 feet north-south. The elevation of the site is approximately 790-800 feet m.s.l. The vegetation on the site was originally forest, and visibility was poor. The site ws not discovered until after the reservoir clearing. The entire western edge of the site was bare, and visibility was good. Material density was moderate. Clearing had disturbed the western edge of the site, but it appeared to be in a relatively good state of preservation.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS

Thin Chert Biface Fragment	1

LITHIC WASTE

Chert Flakes	30
Chert Shatter	1
Quartzite Flakes	2
Quartzite Shatter	2
Quartz Shatter	1
Silicified Sediments Flakes	2
Fire-cracked Rock	7
Unmodified Stone	1

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. The thin biface fragment is part of a completed tool and exhibits primary percussion and secondary pressure flaking. It is not, however, particularly informative. The remainder of the material is lithic waste. The chert, quartzite, quartz, and silicified sediments waste are all indicative of tool manufacture and/or tool maintenance. The latter three material types are indicative of the use of local sources of

raw material. Fire-cracked rock is not particularly numerous but is indicative of thermal activities involving heat retention. Although the sample size is not small, the lack of tools makes it impossible to determine activities which occurred on the site and concommitant site function.

This site is located on the right (north) bank of an unnamed intermittent stream flowing into the East Fork. The site lies on a small secondary ridge. Slope aspect is southwest. Hill slopes are steep to the south; moderate to the northwest. There is a draw separating this secondary ridge from the main ridge on which 23MC336 is located. The juncture of the intermittent stream with the East Fork is approximately 500 feet to the west. The size of the site could not be determined. The elevation of the site is unknown but is estimated to be ca. 800-830 feet m.s.l. The vegetation on the site was forest, and visibility was poor. The site was discovered after the reservoir clearing. Clearing only removed vegetation from the extreme lower slopes of the site. While material density was low, lower slopes tend to have lower densities than the main area of a site. It was decided that, based on the physiographic setting of the material recovered, the upper slopes probably represented a site. Material density of the main site area could not be determined. The upper slopes are all still in forest, and the site appears to still be in a relatively good state of preservation.

MATERIAL COLLECTED

PREHISTORIC

LITHIC WASTE
- Chert Shatter 2
- Fire-cracked Rock 5

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. The chert waste is indicative of tool manufacture and/or tool maintenance, and the fire-cracked rock is indicative of thermal activities involving heat retention. Little else can be said of the site. As material was collected only from the lower slopes of the site, material density on the upper slopes is estimated to be considerably higher. While activities can not be determined from this small sample, most of the site will probably remain intact and can be determined at a future date.

23MC360

This site is located on the left (east) bank of the East Fork. The site lies in the floodplain of the East Fork at the entrance of an intermittent stream into the floodplains. The site is a buried site. The site lies south of the intermittent stream between 23MC120 and 23MC121. The river originally flowed approximately 500 feet to the west. The size of the site could not be determined, as material was recovered from the surface of a tree disposal pit only. There was no material on the surface away from the pit. The depth of burial and elevation of the site are unknown. The elevation of the floodplain in the site area is 779 feet m.s.l. The original vegetation on the site was grass and secondary growth. The site was not discovered until after the reservoir clearing. The entire area had been cleared, and material was recovered from the surface of a tree disposal pit only. Material density was moderate, but the intermixing of material when the pit was filled makes it difficult to determine original material density. The portion of the site within the tree disposal pit has been destroyed, but the relative state of preservation is unknown. As the site is buried, we have no indication of the total site area or how much remains intact.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Distal Projectile Point Fragment (Figure 195, a) 1

GROUND/PECKED STONE
- Pecked Stone (Figure 195, b-d) 3

LITHIC WASTE
- Chert Flakes 7
- Chert Shatter 1
- Fire-cracked Rock 10
- Unmodified Stone 2

None of the material recovered can be considered temporally diagnostic. Although the distal projectile point fragment is from a relatively large point, it is only indicative of hunting as an activity. The three pecked

stone specimens are indicative of plant processing on the site. One of these specimens exhibits one entire face heavily roughened and may not be a plant processing tool. Although the sample size is relatively small, the numbers of tools connected with plant processing are considerably higher than those associated with hunting. This is typical of ratios from a number of bottomland sites (cf. 23MC351 and 23MC352) in both tool ratios and total sample sizes.

The recovered chert waste is indicative of tool manufacture and/or tool maintenance. The presence of larger amounts of fire-cracked rock indicates that thermal activities involving heat retention were important. Most of the materials recovered are similar in quantity and type to sites referred to previously (Grantham 1977:203) as transient camps. They exhibit tool ratios similar to large and small seasonal sites, but sample sizes are usually quite small.

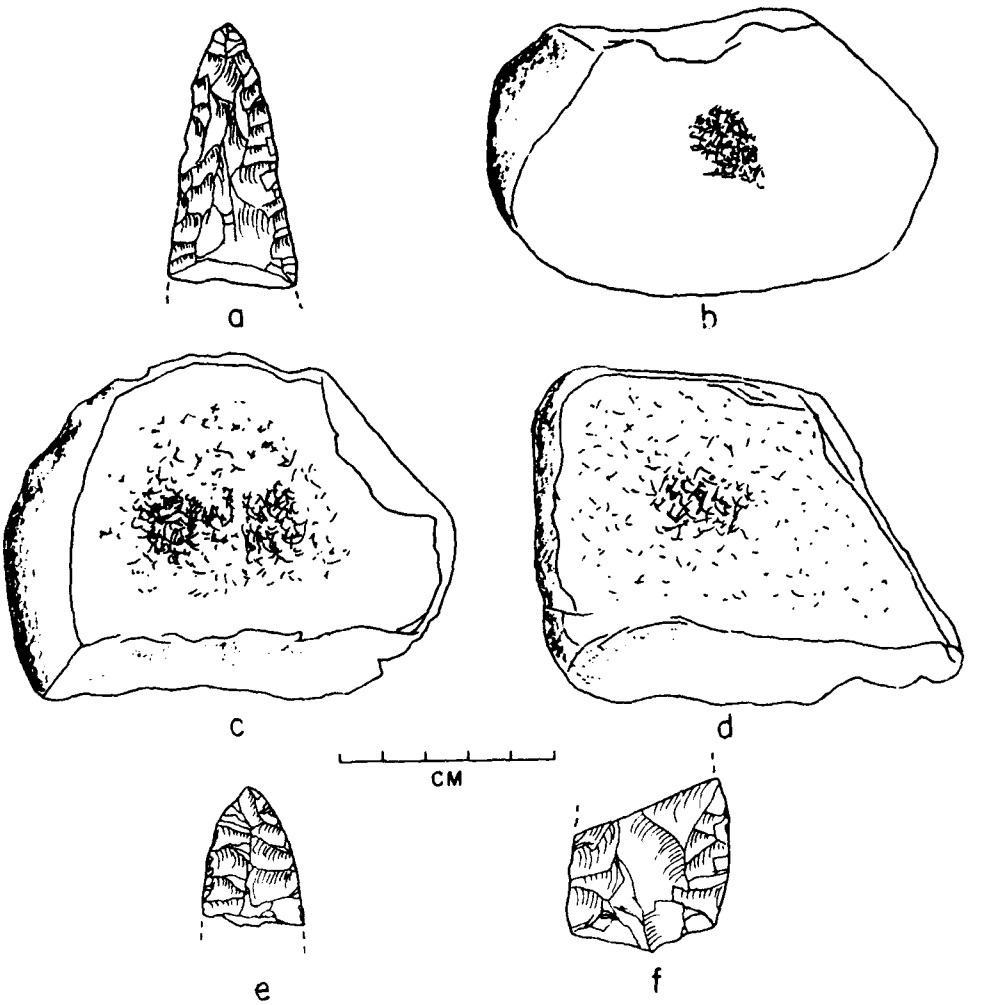

Figure 195. 23MC360, 23MC361. Artifacts. (a) 23MC360 - Distal Point Fragment, (b-d) Pecked Stone, (e) 23MC361 - Distal Point Fragment, (f) Thin, Broad Biface with Square Base.

23MC361

This site is located on the left (northeast) bank of the East Fork. The site lies on a high hill overlooking the river. Slope aspect is southwest. Hill slopes are moderate to steep on the east and west. These is a broad deep draw to the west and a narrow deep draw to the east. The river originally flowed about 300 feet to the south of the hill. The site is separated from 23MC149 and 23MC158 to the west and 23MC321 to the southeast by the natural breaks of the draws. The size of the site is estimated to be approximately 100 feet north- south by 60 feet east-west. The elevation of the site is ca. 780-785 feet m.s.l. The vegetation on the site area at the time of the original survey was forest, and visibility was poor. Although the area was shovel tested, the site was not discovered until after the reservoir clearing. The entire area was cleared of trees and bare, and visibility at that time was excellent. Material density was relatively low considering the degree of visibility. The site area was marginally disturbed by clearing, but most of the sites in this area are relatively deep. It is probable that the site is still in a good state of preservation.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Distal Projectile Point Fragment (Figure 195, e). 1
- Thin Broad Biface with Square Base - Proximal Fragment (Figure 195, f). . . . 1
- Thin Chert Biface Fragments. 2

FLAKE TOOLS
- Retouched Flake. 1
- Utilized Flakes. 3

LITHIC WASTE
- Chert Flakes 23
- Chert Shatter. 1
- Fire-cracked Rock. 33

None of the material recovered is temporally diagnostic. The distal projectile point fragment is indicative of hunting as an activity on the site, but the

small sample size does not give us a good indication of this activity in the economy. The thin biface with square base exhibits little or no wear and is probably a blank or preform fragment. Biface fragments are common on most sites in the area and illustrate the long use-life and heavy reuse of tools until highly fragmentary.

The retouched flake exhibits one retouched lateral margin with the other lateral margin utilized. Both working elements are indicative of cutting activities. The one complete utilized flake exhibits one utilized edge. The edge is acute and was apparently utilized in a cutting motion. The two flake fragments have the one remaining lateral margin utilized. Although edges are relatively acute, wear on the edges is unifacial, and both are fragments of scraping tools.

The remaining materials are lithic waste. The chert flakes and shatter are indicative of tool manufacture and tool maintenance. Fire-cracked rock is indicative of thermal activities involving heat retention. The sample size is small enough that little can be said of the activities on the site and concommitant site function.

23MC362

This site is located on the right (west) bank of the East Fork. The site lies on a long low rise in the floodplain of the river. The nature of the origin of the rise is uncertain, but it is probable that it is an erosional remnant. The rise extends from a dissected hill which projects well eastward of the other hills in the area. While it is posited that it represents an erosional remnant, only structural data gathered from excavation can ascertain its geomorphology. The rise slopes slowly to the south. There is an old channel scar along the eastern and southern edges of the site. The size of the site south of the road is approximately 600 feet north-south by 200 feet east-west. The elevation of the site is ca. 810-814 feet m.s.l. As Corps of Engineers property ends at the road, it was not determined if material is present on the dissected hill to the north or if material distribution is continuous. The vegetation at the time of the survey was plowed for rowcrops, and visibility was excellent. Material density was moderate to high. There was a large amount of historic material on the site, but it could not be determined surficially if there was an historic structure on the site or if this material is the result of the historic site on the other side of the road. The area of the site has been plowed, but it could not be determined if subplowzone deposits were present or the relative state of preservation of the site.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS

Large Ovate Point (Figure 196, a)	1
Medium Ovate Point (Figure 196, b)	1
Lanceolate Point-Proximal Fragment (Figure 196, c)	1
Small Side-notched Point (Figure 196, d)	1
Large Asymmetric Biface (Figure 196, e)	1
Large Triangular Biface (Figure 196, f)	1
Thin, Broad Biface with Convex Base - Proximal Fragment (Figure 196, g)	1
Medial Projectile Point Fragment	1
Thin Biface Fragment	5

Thick Biface Fragment	4
Miscellaneous Worked Chert	4
FLAKE TOOLS	
End Scraper	1
Retouched Flakes	3
Utilized Flakes	5
CORES	
Chert Polyhedral Cores	12
Chert Core Fragments	7
GROUND/PECKED STONE	
Pecked Stone (Figure 197, a-f)	13
Ground Stone (Figure 198, a)	2
Pecked and Battered Stone (Figure 198, b-c)	2
Ground and Pecked Stone (Figure 198, d)	1
Ground, Pecked and Battered Stone (Figure 198, e)	1
Facially Battered Stone	1
LITHIC WASTE	
Chert Flakes	346
Chert Shatter	58
Quartzite Shatter	1
Quartz Flake	1
Fire-cracked Rock	217
Unmodified Stone	5

HISTORIC

BONE/SHELL	
Miscellaneous Shell Fragments	4
Cow Tooth	1
Unidentified Bone	1
METAL	
Miscellaneous Cast Iron	4
Miscellaneous Sheet Iron	3
Cast Iron Hinge	1
Elevator Link	1
Washer	1
Bolt	1
Barbed Wire	1
Unidentified Lead	1
BRICK	
Miscellaneous Fragment	5
CINDER	12

BUTTONS
Milk Glass, Four Hole. 2

GLASS
Miscellaneous Amber. 3
Blue Green Jar 15
Light Blue Green Jar 2
Dark Blue Green Bottle 2
Clear, Decorated 4
Light Lavender, Decorated. 6
Blue Green Bottle Rim (Blown). 1

STONEWARE
Albany Slip Interior/Salt Glazed Exterior. . . 5
Unglazed 3
Unglazed Interior/Albany Slip Exterior 4
Salt Glazed Exterior/Painted Interior. 3
Salt Glazed Exterior/Unglazed Interior 1
Albany Slip Interior and Exterior. 2
Salt Glazed Interior and Exterior. 1
Highly Refined, Lead Glazed. 4
Doorknob 1

IRONSTONE
Plain White Bodies 41
Plain White Rims 4
Plain White Bases. 4
Plain White Cup Handle 1
Decorated Handle Fragment. 1
Plain White with Makers Marks. 2
Brown Transfer Printed 1

Unfortunately, neither of the ovate points are diagnostic. The only diagnostic point is the small side-notched point. It is similar to a number of Late Woodland points in the area. It is somewhat similar to the type Klunk Side-notched.

The numbers of ground and pecked stone are similar to a number of fall seasonal sites in the area. All were apparently used as plant processing tools. The numbers indicate that plant processing was an important activity on the site. Most of the bifaces are not particularly informative. The large triangular biface is heavily worn. It exhibits heavy wear along the lateral margins through hafting and heavy edge shattering and resharpening on the working element. The large convex-based biface also exhibits heavy edge rounding and flake scar abrasion. Although both were used as tools, their function is unknown.

The site is a large fall seasonal site based on the presence of a large number of ground and pecked stone indicative of processing fall plant products. The components present on the site are largely unknown. Although there is at least a Late Woodland component, the other points are not considered to be temporally diagnostic. It is estimated that the site is multicomponent.

The large amount of historic material represents an historic structure on the site or from the historic building unit to the north. The recovered material indicates a long occupation. Although most of the ironstone is whiteware, there is a minor component of pearlware. It appears that much of the glass, stoneware, and ironstone are indicative of a late nineteenth century occupation. There are, however, indications in the glass and metal of later occupations extending well into the twentieth century.

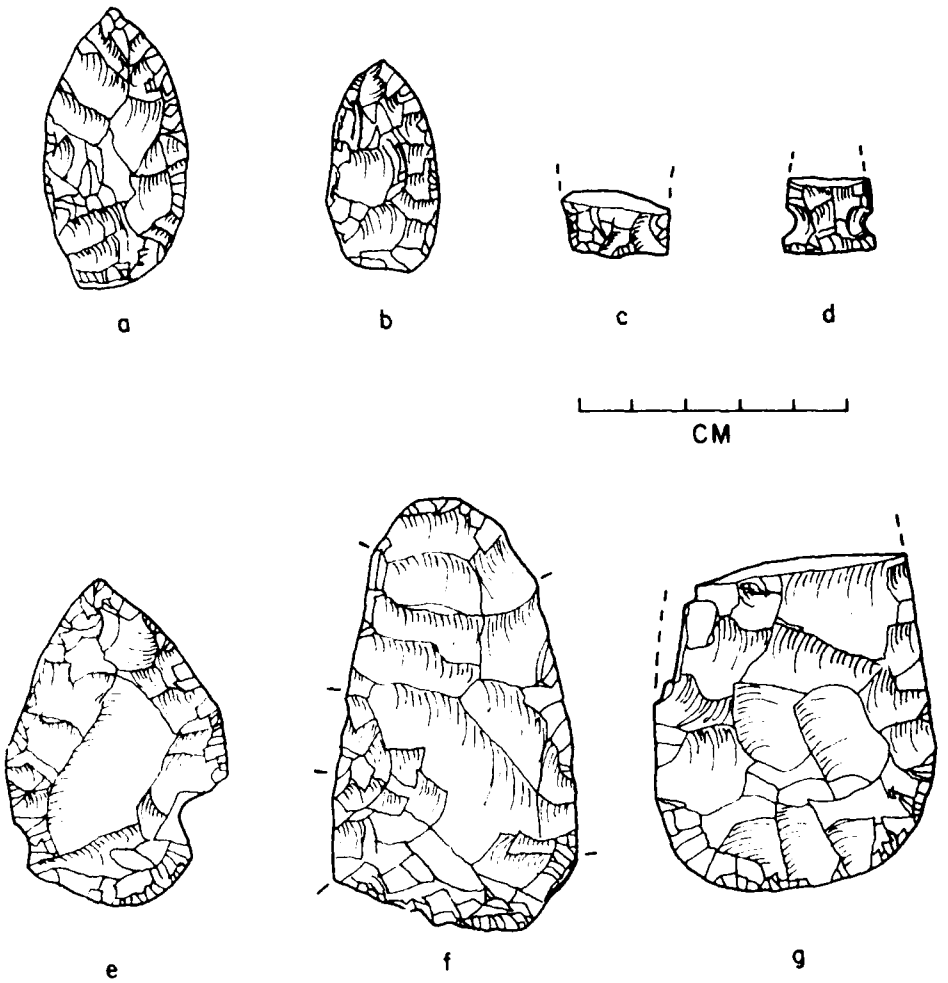

Figure 196. 23MC362. Artifacts. (a) Large Ovate Point, (b) Medium Ovate Point, (c) Lanceolate Point, (d) Small Side-notched Point, (e) Large Asymmetric Biface, (f) Large Triangular Biface, (g) Thin, Broad Biface with Convex Base.

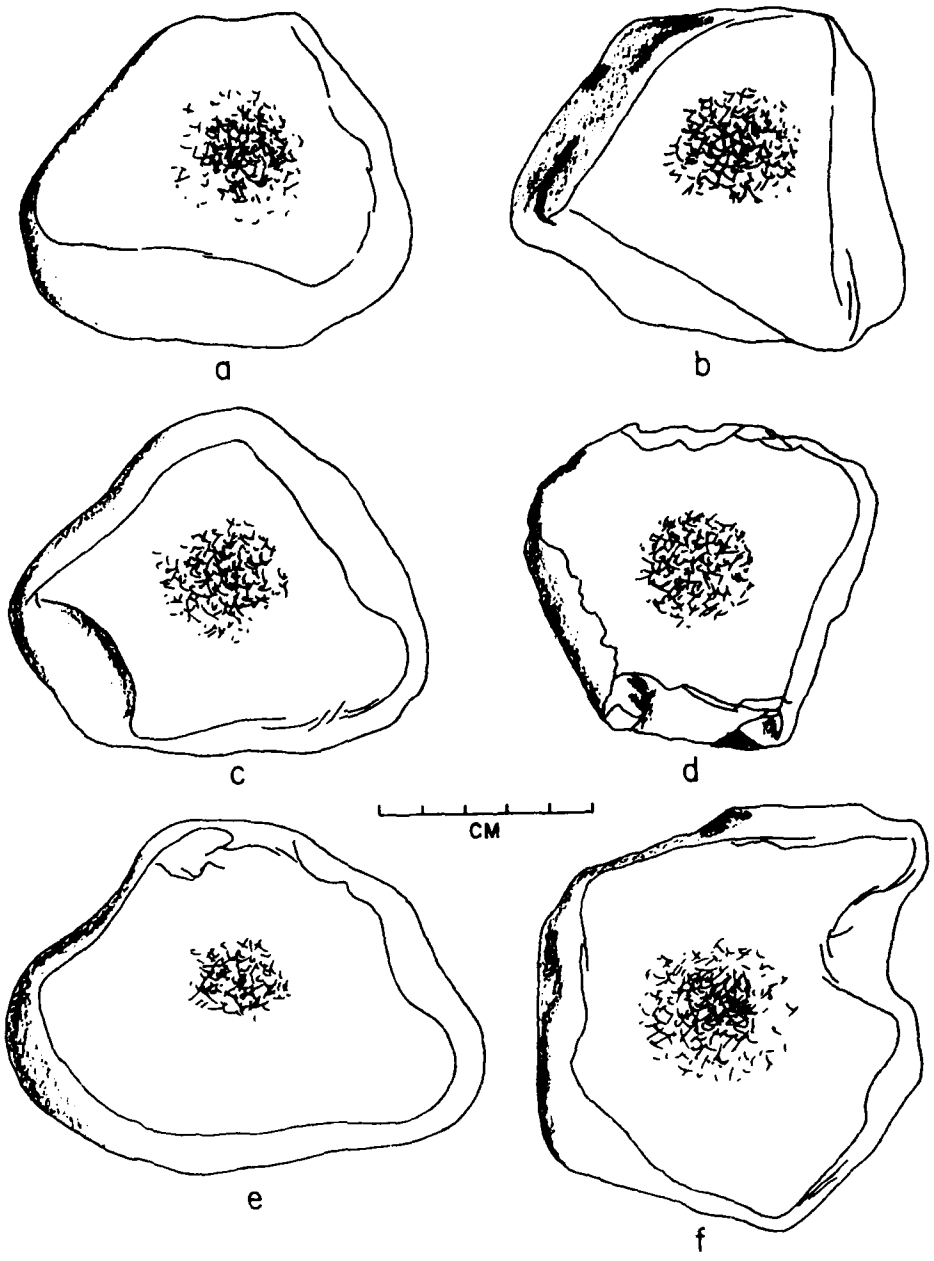

Figure 197. 23MC362. Artifacts. (a-f) Pecked Stone.

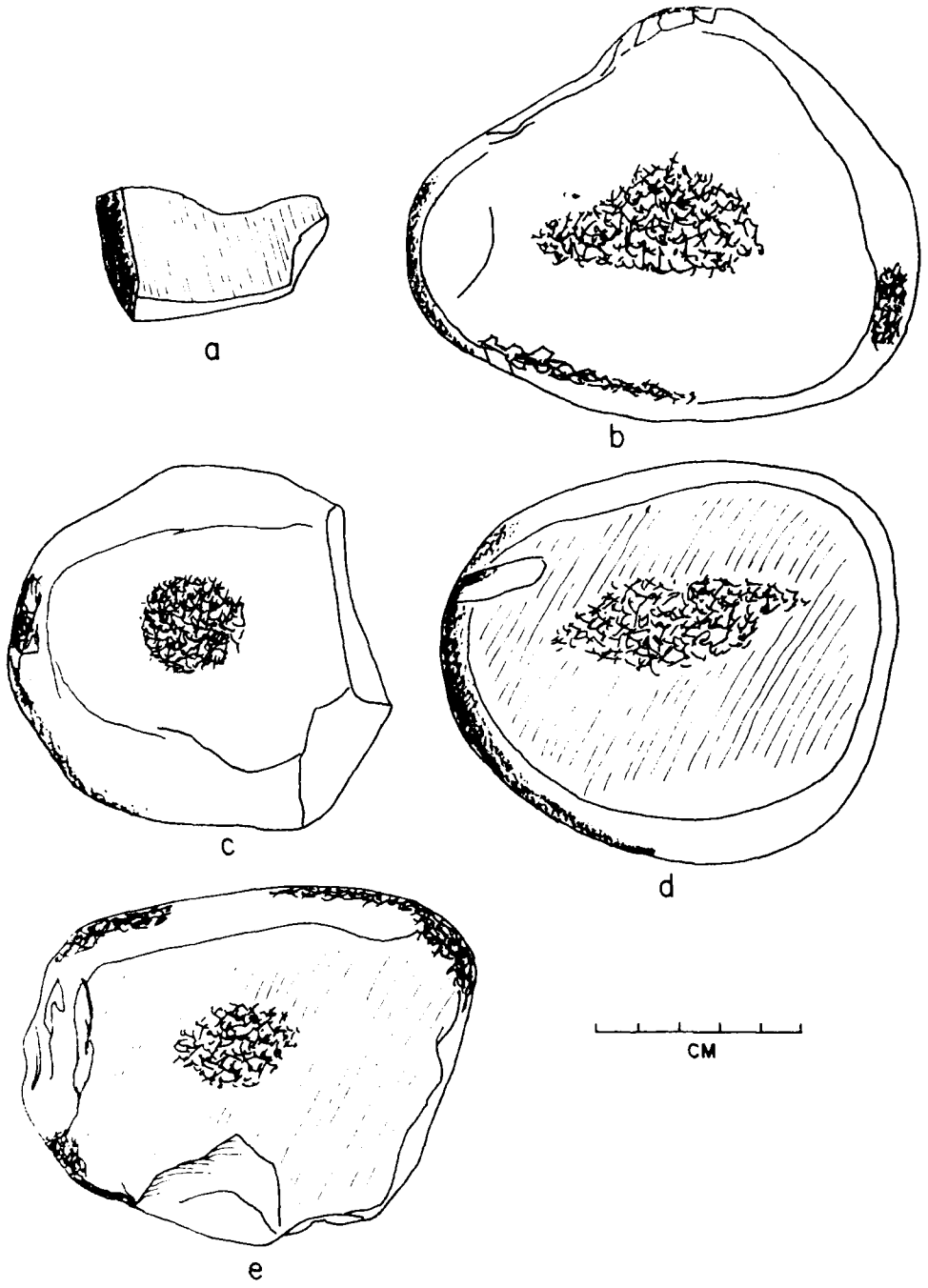

Figure 198. 23MC362. Artifacts. (a-b) Ground Stone, (c-d) Pecked and Battered Stone, (e) Ground and Pecked Stone, (f) Ground, Pecked, and Battered Stone.

23MC363

This site lies on the left (east) bank of the East Fork. The site lies on a flat dissected hill remnant between two intermittent streams. The remnant is low, relatively flat, and slopes slowly up to the hill to the west. Intermittent streams enter the East Fork on both the north and south sides, and the East Fork flows along the western edge. The size of the site is approximately 250 feet east-west by 80 feet north-south. The elevation of the site is ca. 780-790 feet m.s.l. Original vegetation on the site was forest, and visibility was poor. The site was not discovered until after the reservoir clearing. The entire surface had been cleared and was bare. Visibility was excellent. Material density was fairly high. Clearing had disturbed the surface and near-surface, but it appeared that the site area was still in a relatively good state of preservation.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Miscellaneous Proximal Projectile Point Fragment (Figure 199, a) 1
- Distal Projectile Point Fragment (Figure 199, b) 1
- Distal Biface Fragment (Figure 199, c) 1
- Thin Chert Biface Fragments 2

FLAKE TOOLS
- Utilized Flakes 2

CORES
- Chert Polyhedral Cores 4

GROUND/PECKED STONE
- Pecked Stone (Figure 199, d) 1
- Ground Stone (Figure 199, f-h) 4
- End Battered Stone (Figure 199, i) 1
- Pecked and Battered Stone (Figure 199, e) . . 1

HEMATITE
- Ground Hematite 1

CERAMICS
- Smoothed Exterior, Sand and Grit Tempered . . 2

Smoothed Exterior, Sand Tempered	2
Smoothed Cordmarked Exterior, Sand Tempered	1
Eroded Exterior, Sand Tempered	4
Eroded Exterior, Sand and Grit Tempered	2
LITHIC WASTE	
Chert Flakes	159
Chert Shatter	12
Quartz Shatter	1
Fire-cracked Rock	71
Unmodified Stone	1

The proximal point fragment is not diagnostic, although both point fragments indicate that hunting was an activity on the site. The relatively high occurrence of fragmentary tools is typical of sites in the area and is indicative of the long use-life of tools. The utilized flakes are indicative of scraping activities.

The numbers of ground and pecked stone are typical of a number of seasonal sites in the area. The end battered cobble was used in direct contact with dense materials, while the other ground and pecked stone tools as indicative of plant processing activities. The piece of ground hematite was ground for pigment. There is no indication of a tool shape and edge grinding is heavy. The ceramics are most similar to Weaver wares in the area (cf. 23MC65, this volume). Unfortunately, the recovered sample does not contain decoration, and such an assignment is tenuous. If they do fall within Weaver ware, they would indicate a Late Woodland component on the site.

The remainder of the materials are lithic waste. The chert waste indicates both tool production and tool maintenance. Chert flakes are dominated by bifacial thinning, trimming, and retouch flakes. The fire-cracked rock indicates the use of stone for heat retention in thermal activities.

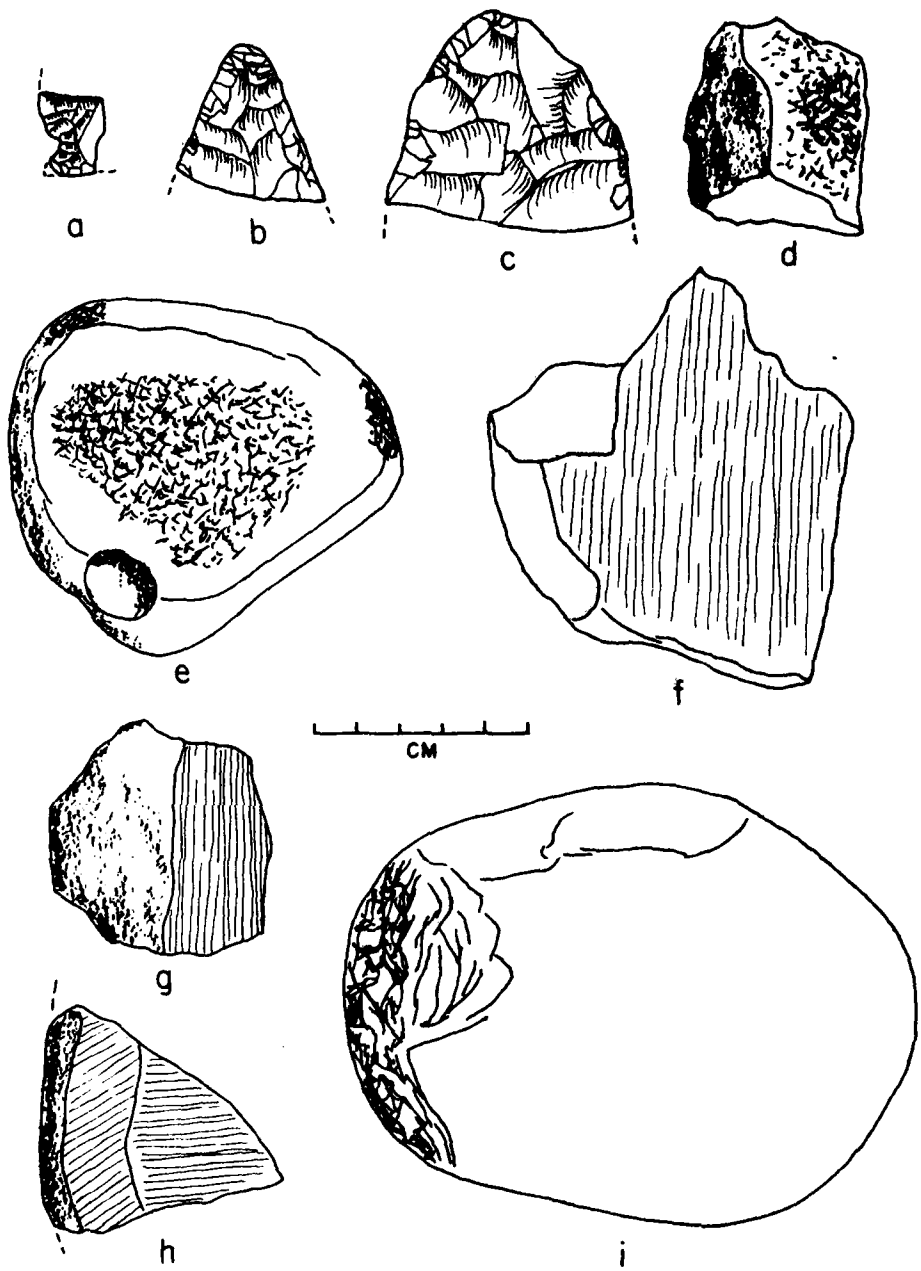

Figure 199. 23MC363. Artifacts. (a) Proximal Point Fragment, (b) Distal Point Fragment, (c) Distal Biface Fragment, (d) Pecked Stone, (e-h) Ground Stone, (i) End Battered Cobble.

This site is located on the left (east) bank of the East Fork. The site is located on a high, steep hill overlooking the river. Slope aspect is west. There is a broad deep draw to the north and a narrow deep draw to the south. The river flows along the western edge of the site. Slopes are steep to the north and west; moderate to steep to the south. The river originally flowed near the western edge of the hill, approximately fifty feet from the toe of the slope. The size of the site is approximately 200 feet east-west by 100 feet north-south. The elevation of the site is ca. 780-805 feet m.s.l. The original vegetation on the site was forest, and visibility was poor. On the original survey, the hill was shovel tested, but material density appears to have been low enough that nothing was recovered. The site was not discovered until after the reservoir clearing. At that time, all vegetation up to elevation 794 feet m.s.l. had been removed, and all of the lower hill was bare. Material density was relatively low considering the amount of surface area examined. Although clearing has disturbed much of the surface and near surface, the site appeared to be in a fair state of preservation.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Quartzite Biface Fragment 1

FLAKE TOOLS
- Retouched Flake (Figure 200, a) 1

CORES
- Polyhedral Core 1

HEMATITE
- Hematite Flake 1

LITHIC WASTE
- Chert Flakes 29
- Chert Shatter 7
- Silicified Sediments Shatter 1
- Fire-cracked Rock 102
- Unmodified Stone 20

None of the material recovered is diagnostic of chronological placement, site function, or of seasonality. The retouched flake is a large, thick flake with heavy unifacial retouch on one side. It was used as a large side scraper. The waste materials indicates that tool maintenance and manufacture occurred on the site.

Much of the fire-cracked rock was recovered from a fire-cracked rock feature near the south-central edge of the site. This feature contained 58 pieces of fire-cracked rock, the retouched flake, ten chert flakes, the hematite flake, and a chert core. The feature was not excavated due to time constraints. Material density away from the feature was relatively low.

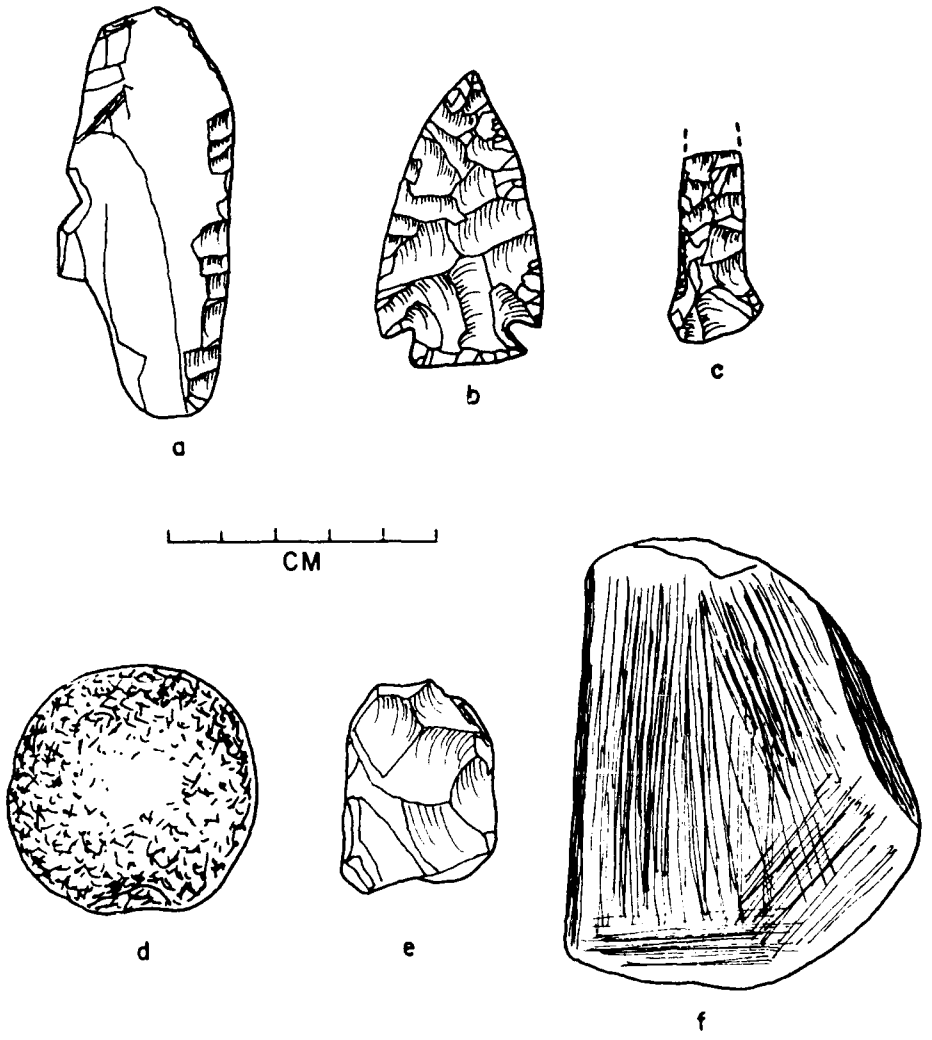

Figure 200. 23MC365 and 23MC366. (a) 23MC365 - Retouched Flake, (b) 23MC366 - Narrow Corner-notched Point, (c) Proximal Drill Fragment, (d) Small Hammerstone, (e) Chipped Hematite, (f) Scratched Hematite.

This site is located on the left (south) bank of an unnamed intermittent stream just prior to the juncture of the intermittent stream with the floodplain of the East Fork. The site lies on a low hill above the level of the floodplain. Slope aspect is west. The hill is bounded by the floodplain of the intermittent stream on the north and west and by a broad deep draw on the south. Site 23MC327 lies on the floodplain to the west, and 23MC365 lies across the broad deep draw to the south. The river originally flowed approximately 200 feet to the west. The size of the site could not be determined, as the intermittent stream valley was not cleared. The site is estimated to be 150 feet east-west by 70 feet north-south, based on the hill physiography. The elevation of the site is estimated to be 770-790 feet m.s.l. Vegetation on the site consisted of forest, and visiblity was poor. Material was recovered from the edge of the hill in areas affected by wave erosion.

Water behind the dam after closure but prior to impoundment reached the lower part of the hill, and wave erosion had heavily affected the site. Material density was moderate. The site appeared to be in a fair to good state of preservation at the time the site was visited.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Narrow Corner-notched Point (Figure 200, b). . . 1
- Distal Point Fragment. 1
- Proximal Drill Fragment (Figure 200, c). 1
- Thin Biface Fragments. 3
- Miscellaneous Worked Chert 1

FLAKE TOOLS
- Utilized Flakes. 6

CORES
- Chert Polyhedral Core. 1
- Chert Core with Flat Striking Platform 1
- Chert Core Fragment. 1

GROUND/PECKED STONE
- Small Hammerstone (Figure 200, d). 1

HEMATITE
Chipped Hematite (Figure 200, e) 1
Scratched Hematite (Figure 200, f) 1

LITHIC WASTE
Chert Flakes 78
Chert Shatter. 8
Fire-cracked Rock. 71
Unmodified Stone 2

The narrow corner-notched point falls within White's (1968) subtriangular varieties. The specimen is manufactured from a flake blank and exhibits pressure flaking only. Morphologically it falls within the late Middle Woodland/early Late Woodland. The proximal drill fragment indicates another activity on the site (i.e. drilling or reaming). The small hammerstone is far too small to have been used in many activities. It exhibits wear indicative of direct contact with dense materials. The chipped hematite is irregular and was not in the process of tool-shaping. The scratched hematite was shaved with a chipped stone tool. This was performed to obtain pigment. The remainder of the materials are lithic waste. The chert waste is indicative of tool manufacture and maintenance. The chert flakes have a majority of biface thinning, trimming, and retouch flakes. The fire-cracked rock is indicative of the use of stone for heat retention in thermal activities. The most noteworthy part of the assemblage is the lack of ground and pecked stone in the assemblage.

This site is located on the right (west) bank of the East Fork. The site lies on a high hill isolated by meander loops of the river to the north and south. The hill projects eastward well into the floodplain. Slope aspect is east. Hill slopes to the north and south are steep; moderate to the east. The size of the site was not adequately determined but is estimated to be 450 feet east-west by 200 feet north-south. The elevation of the site is 810-830 feet m.s.l. The site area had been plowed in the past but was partially overgrown. Visibility was poor to fair in places. Material density was moderate. The site was in a relatively poor state of preservation. Plowing of the surface of the site had brought B2-horizon materials to the surface, and it is estimated that much of the site had been heavily disturbed.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS

Chert Biface Fragments	3

LITHIC WASTE

Chert Flakes	66
Chert Shatter	12
Quartzite Flakes	2
Fire-cracked Rock	43
Unmodified Stone	4

None of the material collected is diagnostic of chronological placement, site function, or of seasonality. The waste materials are indicative of tool manufacture and tool maintenance, and the fire-cracked rock indicates the use of stone for heat retention in thermal activities. Little else can be said of the site.

This site is locted on the left (south) bank of the Long Branch. The site is located within the floodplain of the Long Branch. The site is a buried component, and the depth of burial is unknown. It lies south of 23MC369 across the Long Branch. The river originally flowed to the north of the site. The Long Branch makes a broad meander loop around the site and flows around three sides of the site. The size of the site could not be determined, as material was recovered from the surface of tree disposal pits only. There was no apparent material on the surface away from the pit. The depth of burial and elevation of the site are unknown. The elevation of the floodplain in the site area is 768-770 feet m.s.l. The original vegetation on the site was grass and secondary growth. The site was not discovered until after the reservoir clearing. The area had not been cleared and was still in grass. The disposal pits had been dug to place the trees from the river margin to the north, east, and west. It was not possible to determine if surface material was present away from the pit. Material was recovered only from the surface of the tree disposal pits. Material density was moderate to high, but the intermixing of material when the pits were filled makes it difficult to determine original material density. The portion of the site within the tree disposal pits has been destroyed, but the relative state of preservation is unknown. As the site is buried, we have no indication of the total site area or how much remains intact.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Small Expanding-stemmed, Concave-based Projectile Point - Proximal Fragment (Figure 201, a). 1
- Small Triangular Projectile Point - Proximal Fragment (Figure 201, b). . . . 1

FLAKE TOOLS
- Flake End Scraper (Figure 201, c). 1

GROUND/PECKED STONE
- Ground, Pecked, and Battered Stone (Figure 201, d). 1

LITHIC WASTE
Chert Flakes 9
Fire-cracked Rock. 124

There is an insufficient amount of the small, concave-based point to adquately classify it. It is believed to be a Late Woodland point, however, based on the size and the chipping pattern. The small triangular point is more typical of later occupations. Similar points are common on Steed-Kisker occupations in the Kansas City area (Shippee 1972; Wedel 1943; Calabrase 1969); on Oneota sites in central Missouri (Henning 1970); and on Mississippian sites in northeast Missouri and into Illinois. Hunt (1976:5) noted their presence on Late Woodland sites in the Cannon reservoir area, and at the Pigeon Roost Creek site (Teter and Warren1979) similar points occurred in the Late Woodland component.

The flake scraper indicates another activity on the site. While the ground, pecked, and battered stone indicates that plant processing occurred on the site, their number is relatively low compared with many of the seasonal sites in the area. The remainder of the material is lithic waste. The chert waste indicates that tool manufacture and maintenance was an activity, and the fire-cracked rock is indicative of the use of stone for heat rentention in thermal activities.

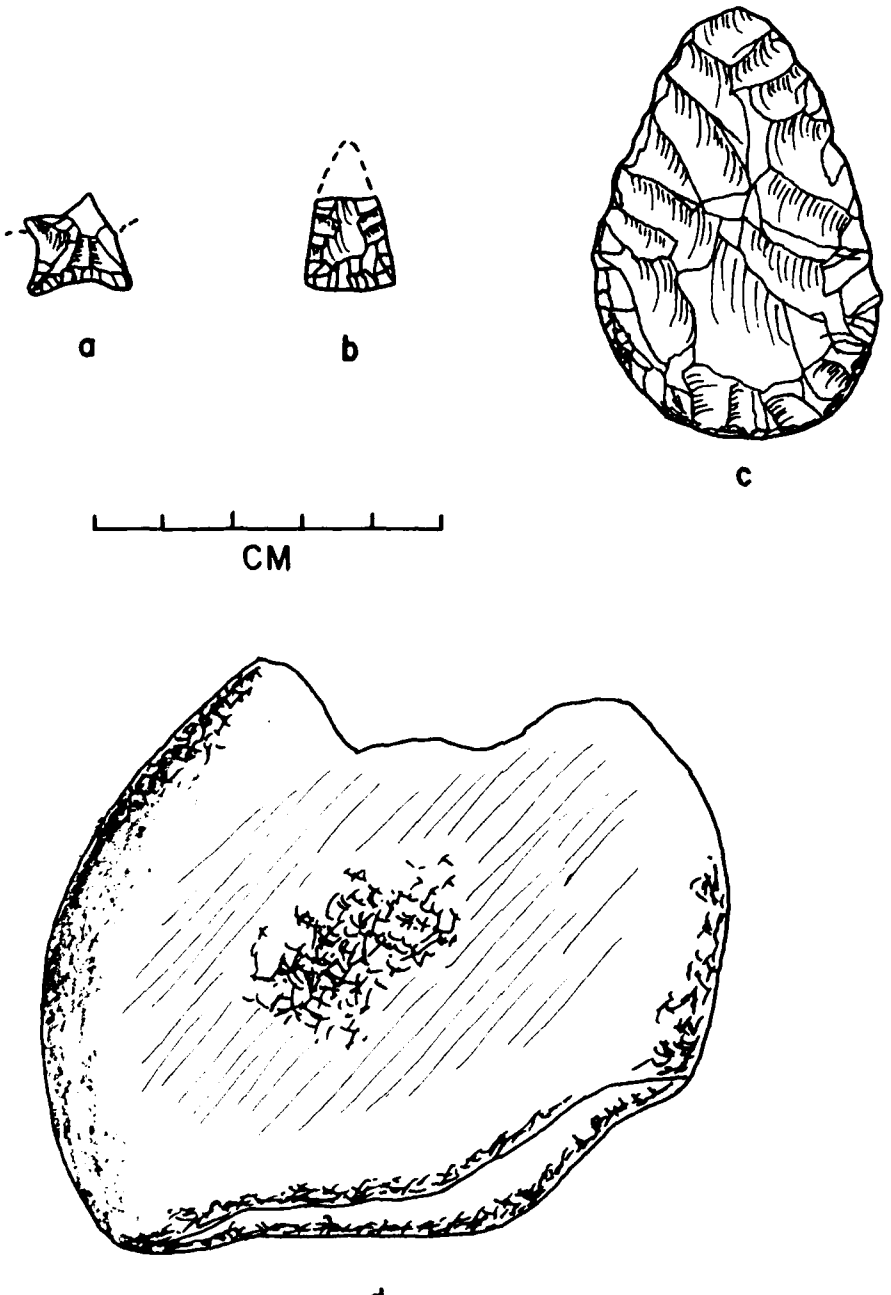

Figure 201. 23MC368. Artifacts. (a) Small expanding-stemmed, concave-based point fragment, (b) Small triangular point fragment, (c) Flake end scraper, (d) Ground, pecked, and battered stone.

23MC369

This site lies on the right (north) bank of the Long Branch. The site lies in the floodplain of the Long Branch at the juncture of a deep draw with the Long Branch floodplain. Only a small amount of material was present on the toe slope of the hill just to the west. Material was confined largely to the floodplain just south of the entrance of the bed of the draw into the river. The site lies immediately south of 23MC69 and north of 23MC368. The river originally flowed just south of the site, and material from the site was actively sliding into the river. The size of the site is approximately 150 feet northwest-southeast by 100 feet northeast-southwest. It appears that the site was originally buried. The elevation of the site is 770-790 feet m.s.l. The site was originally forested. It was not discovered until after the reservoir clearing. The entire surface of the site had been cleared, and the surface was bare. The draw to the north and west had been used to bury trees. This area had been heavily altered, and 10-30 centimeters of soil had been removed from most of the site area. Material density on the site was moderate to high. Most of the remaining portion of the site was in a fair to good state of preservation. The river had already destroyed the southern edge of the site. It could not be determined from surficial indications, but this site and 23MC368 may have originally represented a single site.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS

Small Side-notched Points with Notches Near the Base (Figure 203, a-b)	2
Small Corner-notched Point (Figure 203, c)	1
Small Unclassified Proximal Point Fragment (Figure 203, d)	1
Distal Point Fragment (Figure 203, e)	4
Medial Point Fragment (Figure 203, f)	1
Distal Biface Fragment (Figure 203, g)	1
Thin Biface Fragments	8
Thick Biface Fragments	4
Miscellaneous Worked Chert	1

FLAKE TOOLS

Retouched Flake (Figure 203, h)	1

Utilized Flakes	11
GROUND/PECKED STONE	
Pecked Stone (Figure 204, a-d)	5
Ground Stone (Figure 204, e-f; Figure 205, a-b)	5
Pecked and Battered Stone (Figure 205, c)	1
Battered Stone (Figure 205, d-e)	3
Ground, Pecked, and Battered Stone (Figure 205, f)	1
Multiple-pitted Stone (Figure 206, a)	1
Large Cobble with Light Grinding (Figure 206, b)	1
CERAMICS	
Smooth, Sand-tempered (Figure 207)	485
Cordmarked, Sand-tempered (Figure 208)	177
LITHIC WASTE	
Chert Flakes	682
Chert Shatter	114
Fire-cracked Rock	2385
Unmodified Stone	87

This site is a good, single component Late Woodland site. The two small side-notched points belong to the type Klunk Side-notched (Perino 1971a:100). Perino estimated their temporal range from A.D. 650 to 900. Dates from the Pigeon Roost Creek site (Teter and Warren 1979:241) indicate a longer temporal range. Two dates were obtained from the Late Woodland level of A.D. 1360 $\pm$ 90 A.D. 1400 $\pm$ 100 indicate that Late Woodland may have lasted considerably longer in the area. The corner-notched point belongs to the type Koster Corner-notched (Perino 1971a). Koster Corner-notched exhibits a similar temporal range to Klunk Side-notched. The ceramics are classic Weaver wares. They exhibit all of the criteria as defined in the type definition (Fowler 1955). These include interior and exterior punch and boss, cordmarked and smooth surface finishes, punctates, dowel and cordwrapped dowel impressions on interior and exterior rims, as well as occasional lip notching.

The surprising aspect of the assemblage is the number of ground and pecked stone. Late Woodland fall seasonal sites had not been encountered in the reservoir previously. The ground and pecked stone are comparable in numbers to other fall seasonal sites in the reservoir. The site is also in an unusual physiographic setting. It lies at the mouth of a draw in the floodplain of the Long Branch.

The site is one of the few represented in the area which is a single component Late Woodland site. It is unique in that it represents the only known Late Woodland fall seasonal site.

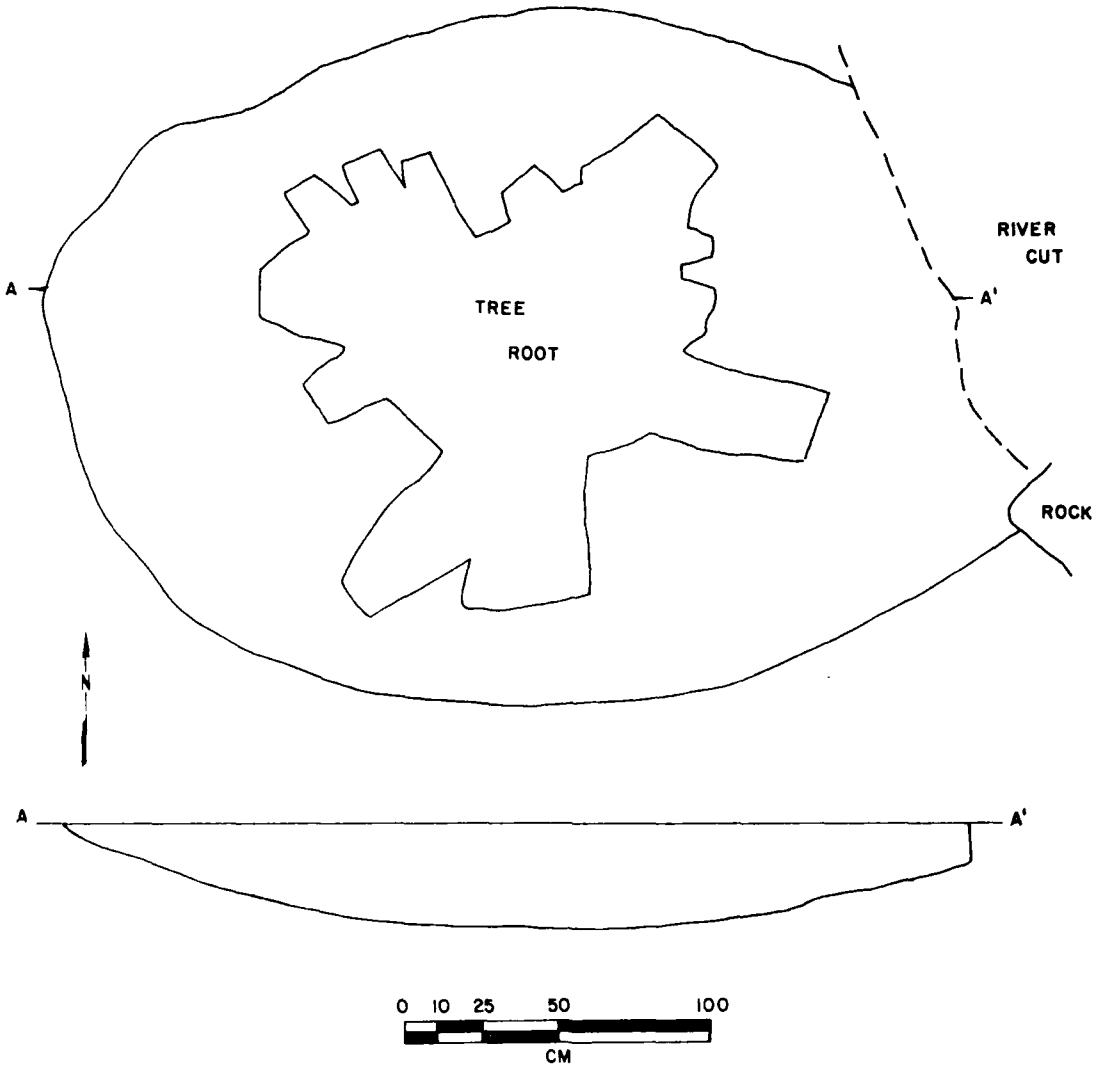

Figure 202. 23MC369. Feature 1.

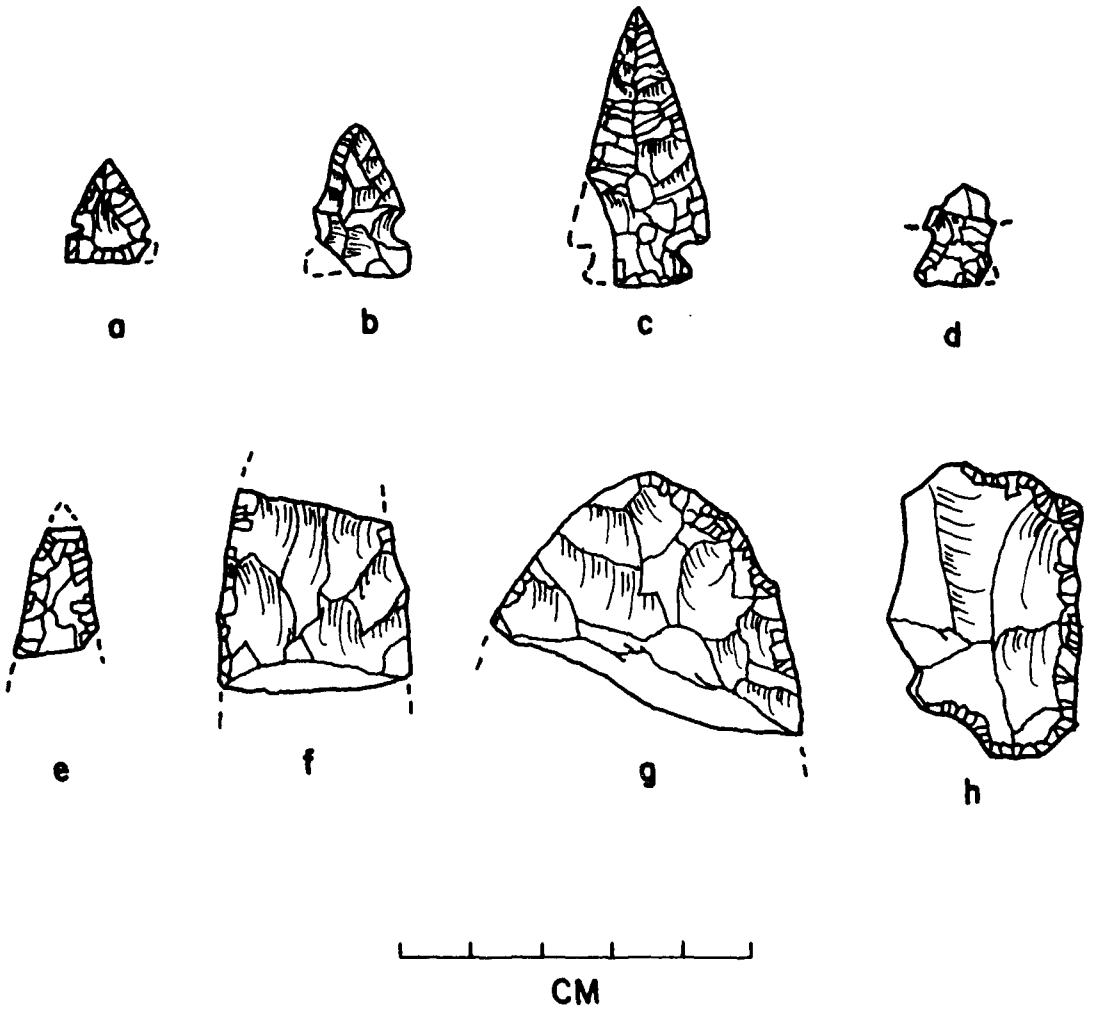

Figure 203. 23MC369. Artifacts. Chert Artifacts.

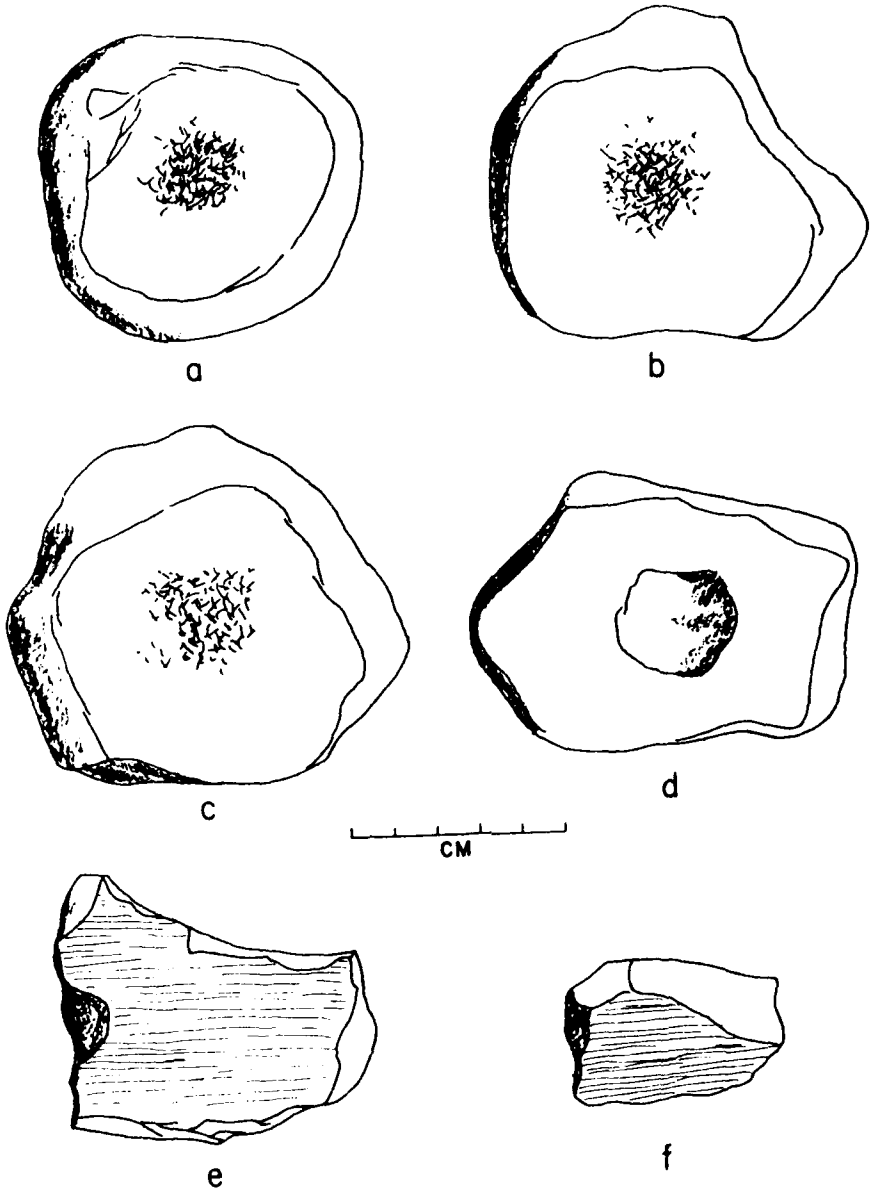

Figure 204. 23MC369. Artifacts. (a-d) Pecked Stone, (e-f) Ground Stone.

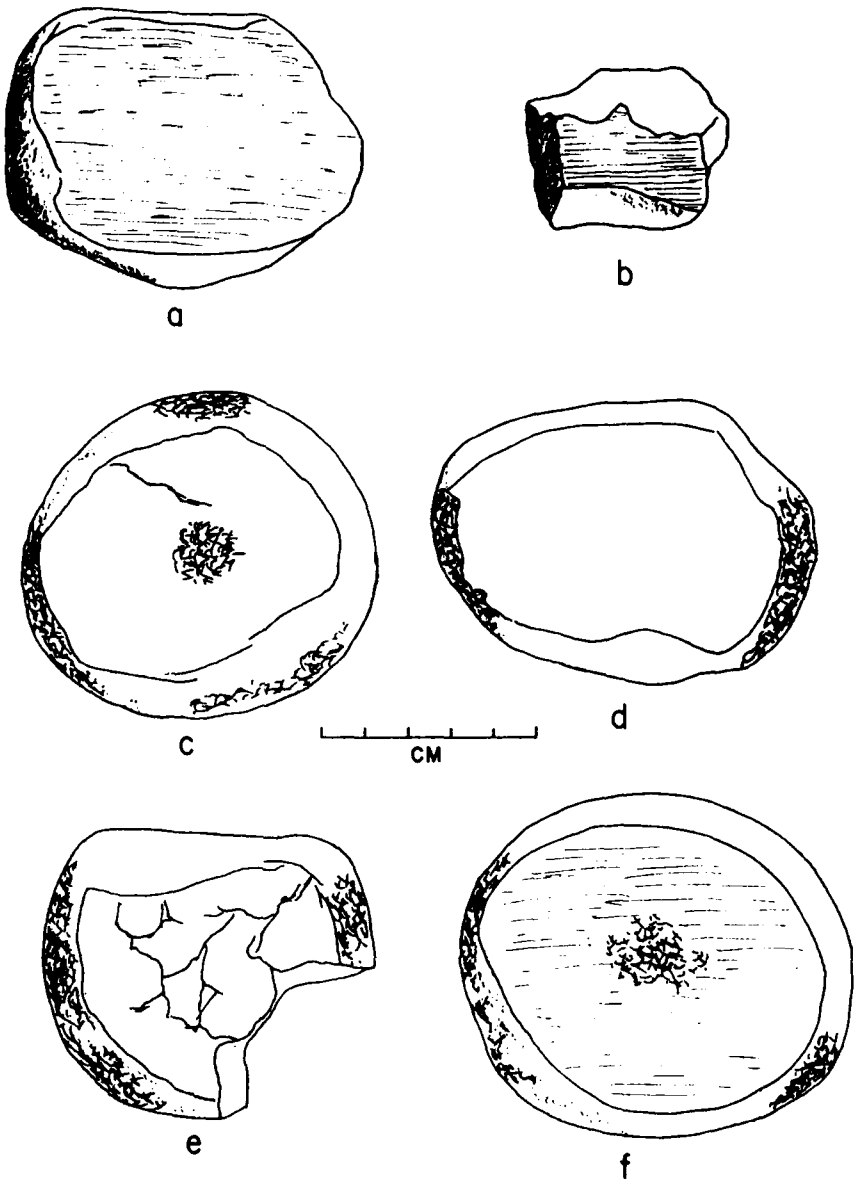

Figure 205. 23MC369. Artifacts. (a-b) Ground Stone, (c) Pecked and Battered Stone, (d-e) Battered Stone, (f) Ground, Pecked, and Battered Stone.

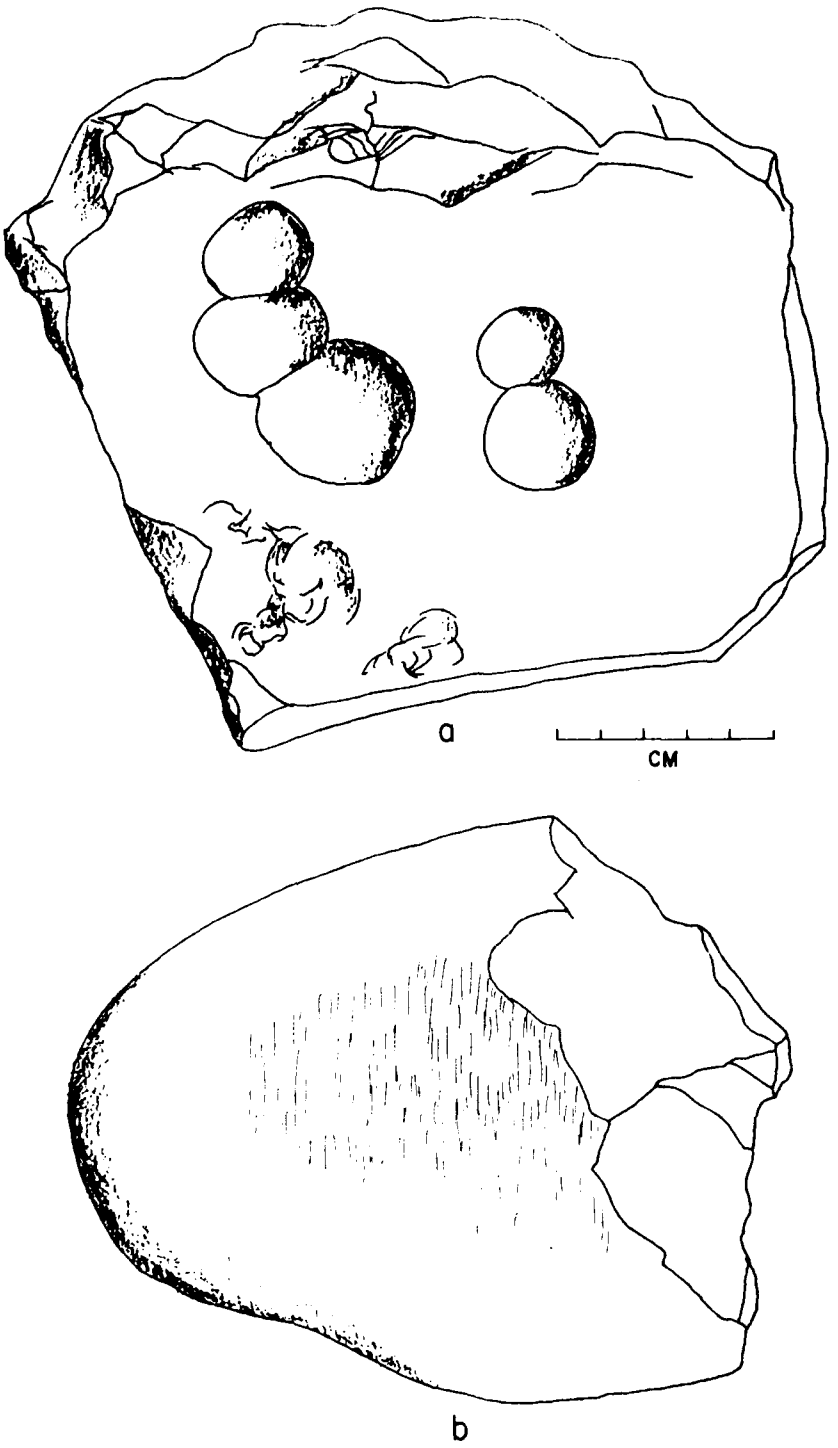

Figure 206. 23MC369. Artifacts. (a) Multiple Pitted Stone, (b) Lightly Ground Cobble.

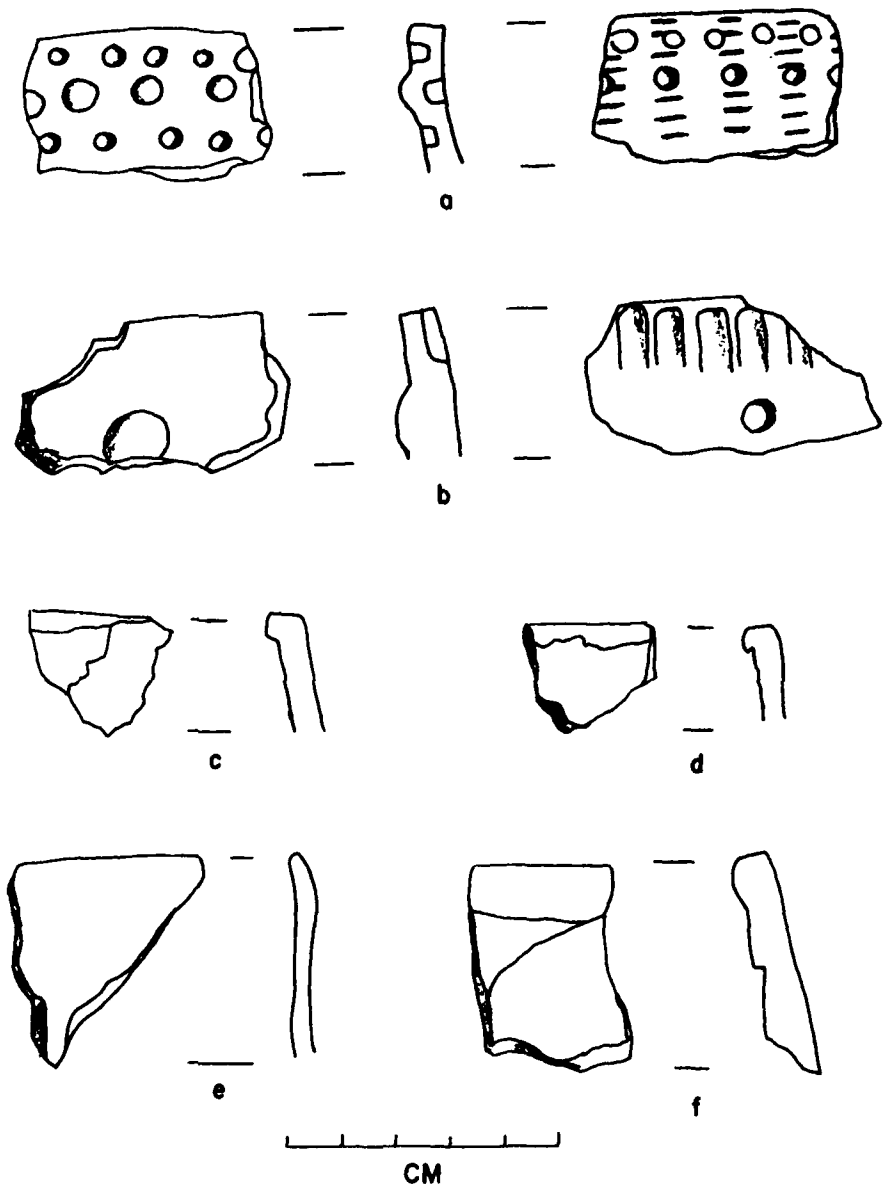

Figure 207. 23MC369. Artifacts. Ceramics.

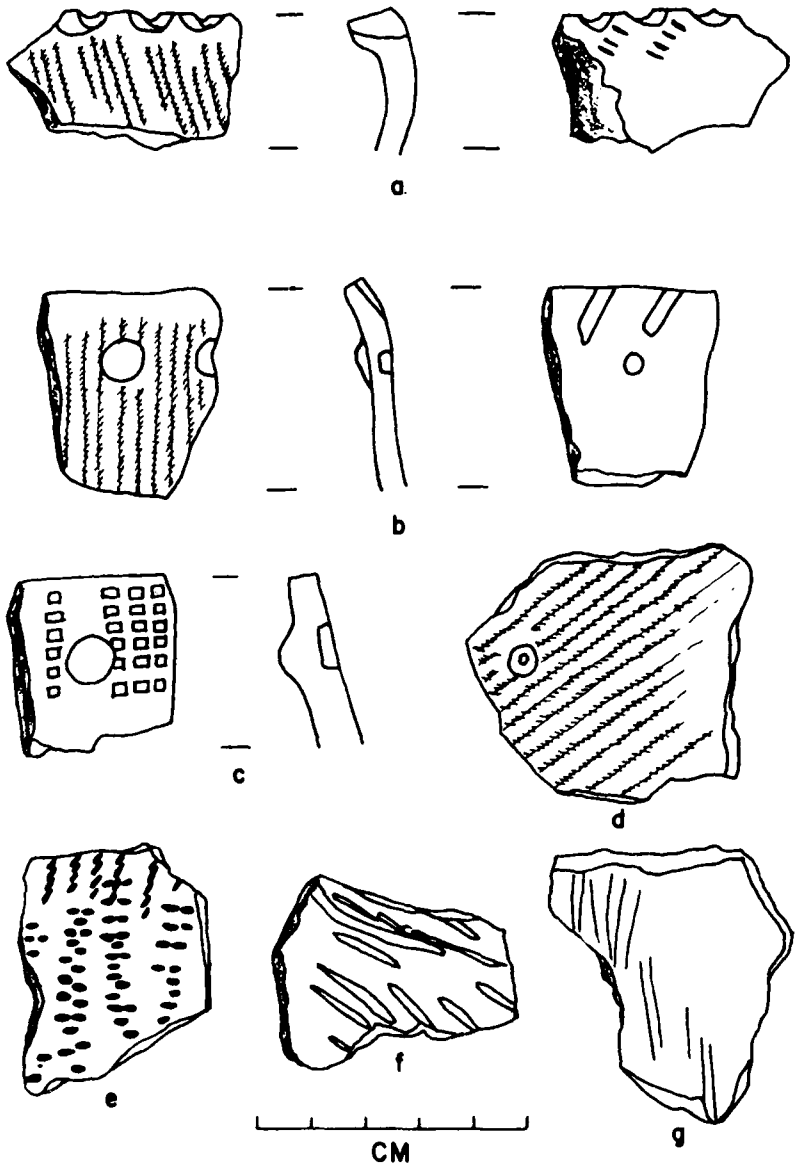

Figure 208. 23MC369. Artifacts. Ceramics.

23MC370

This site is located on the right (north) bank of an intermittent stream flowing into the East Fork. The site lies on a long, relatively flat, dissected secondary slope. There is a large intermittent stream to the south and a broad, deep draw to the north. Hill slopes are relatively steep to the north, west, and south. The intermittent stream flows into the East Fork of the Chariton approximately 600 feet west of the site. The site is confined to the extreme western end of the hill. The site is estimated to be 200 feet northwest-southeast by 100 feet northeast-southwest. The elevation of the site is ca. 770-782 feet m.s.l. The original vegetation on the site consisted of oak-hickory forest, and visibility was very poor. Although the area was shovel tested at the time of the original survey, the site was not discovered until after the reservoir clearing. At that time, all vegetation had been removed, and the surface was bare. Visibility was excellent. Material density was relatively low. Although clearing had disturbed the surface and near-surface, most of the site appeared to be in a moderate to good state of preservation.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Narrow Corner-notched, Concave-based Projectile Point - Proximal Fragment (Figure 209, a) 1
- Stemmed Projectile Point - Proximal Fragment (Figure 209, b) 1
- Distal Projectile Point Fragments. 4

FLAKE TOOLS
- Retouched Flake. 1
- Utilized Flake 1

Lithic Waste
- Chert Flakes 13
- Chert Shatter. 4

The narrow corner-notched point is similar to Group 34 points from other sites. The method of manufacture involving flake blanks and pressure flaking only belong to

what White (1968) referred to as subtriangular varieties. They exhibit the later part of the trend in the Middle Woodland to smaller points similar in morphology to earlier points (Bell 1976:34-35). They range from the late Middle Woodland through the early part of the Late Woodland period. The small stemmed point does not appear to be diagnostic.

The flake tools are indicative of scraping activities. The other materials are lithic waste. The chert waste is indicative of tool manufacture and maintenance. The outstanding aspect of the sites in this series is their small size and the conspicuous absence of plant processing tools. All of the sites in this series appear to be small hunting camps.

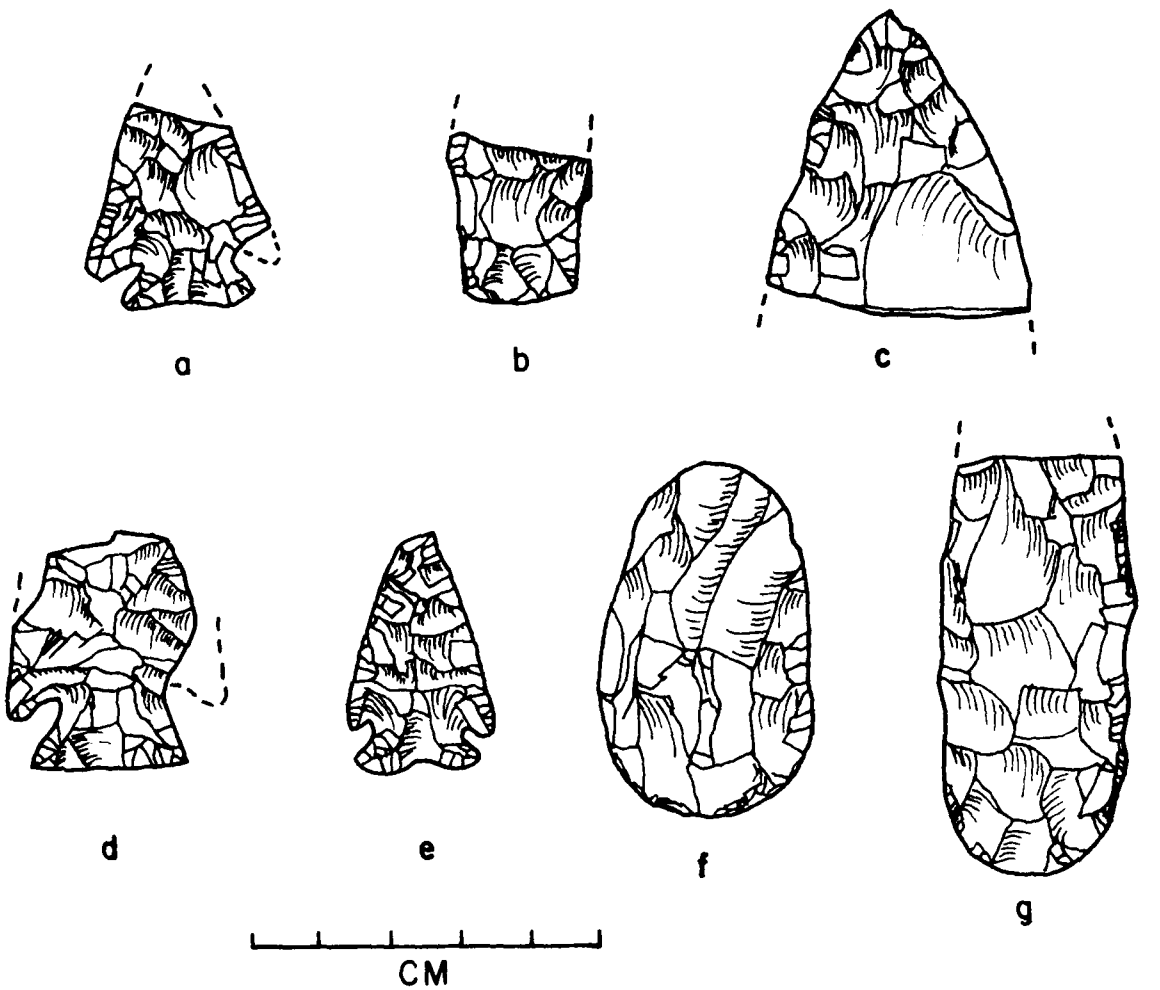

Figure 209. 23MC370, 23MC376, 23MC378, and 23MC380. (a) 23MC370 - Narrow Corner-notched Point, (b) Stemmed Point Fragment, (c) 23MC376 - Distal Point Fragment, (d) 23MC378 - Medium, Corner-notched Point, (e) Small Corner-notched Point, (f) 23MC380 - Thin Ovate Chalcedony Biface, (g) Thin Narrow Biface.

This site is located on the right (south) bank of a large, deep draw. The site lies on a high, relatively flat, dissected secondary ridge. Slope aspect is west. Hill slopes are steep to the west; moderate to the north. The site is bounded by a large, deep draw to the northwest; by a shallow wash to the northeast. There are not natural boundaries to the south. There is a large intermittent stream to the south. The site lies west of 23MC370, and there is a definite break in material between the two sites. The East Fork originally flowed approximately 600 feet to the west. The size of the site is approximately 100 feet east-west by 50 feet north-south. The elevation of the site is ca. 780-783 feet m.s.l. The original vegetation on the site consisted of oak-hickory forest, and visibility at the time of the original survey was poor. The site was not discovered until after the reservoir clearing when the entire surface was bare. Visibility was excellent. The surface had been disturbed by clearing but was still in a good state of preservation. Material density was relatively low.

MATERIAL COLLECTED

PREHISTORIC

FLAKE TOOLS
- Utilized Flakes 2
- Utilized Shatter 1

LITHIC WASTE
- Chert Flakes 4
- Chert Shatter 2

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. The flake tools are highly diverse. The one complete flake exhibits both edges and the distal end utilized. All three working elements exhibits relatively unifacial wear and were used in a scraping motion. The other utilized flake is a distal fragment. One lateral margin has been utilized. Wear is bifacial and was used as a cutting tool. The utilized piece of shatter is roughly triangular in cross-section. One lateral margin exhibts unifacial wear. Wear is heavy with minute flake remoavl as well as larger flake removal. It was apparently used as a scraping tool.

The other materials are lithic waste. They are indicative of tool manufacture and/or tool maintenance. Little else can be said about the site. We do not have a good indication of the activities on the site. All of the sites in this series are small areally and have small surface samples. There is a conspicuous absence of fire-cracked rock.

23MC372

This site is located on the right (north) bank of an intermittent stream flowing into the East Fork. The site lies on a high, relatively flat, dissected secondary ridge. Slope aspect of the ridge is west. Hill slopes are steep to the north. The site is bounded by the slope of the intermittent stream to the south. There are no other natural boundaries to the site. The site lies on the southern edge of the hill, south and east of 23MC371. There is a definite break between all of the sites in this area. The intermittent stream flowed approximately fifty feet to the south, and the East Fork originally flowed approximately 300 feet to the west. The size of the site is approximately 50 feet in diameter. The elevation of the site is ca. 786 feet m.s.l. The original vegetation on the site was oak-hickory forest, and visiblity at the time of the original survey was poor. The site was not discovered until after the reservoir clearing. All vegetation had been removed, and the surface was bare. Visibility was excellent. The surface of the site had been disturbed by the clearing, but the site appeared to be in a relatively good state of preservation. Material density was relatively low.

MATERIAL COLLECTED

PREHISTORIC

FLAKE TOOLS
- Utilized Flake 1

LITHIC WASTE
- Chert Flakes 33
- Chert Shatter. 1

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. The utilized flake is a short blocky flake of local chert. It has a single steep edge which has been utilized. The working element is straight with continuous use flake removal up the dorsal face. It was used in a scraping motion. The remainder of the material is chert waste. This is indicative of tool manufacture and/or tool maintenance. Little else can be said of the site. We do not have a good indication of the activities on the site and the concommitant site function. All of the sites in this series

are very small areally and have small surface samples. There is a conspicuous lack of fire-cracked rock.

23MC373

This site is located on the right (north) bank of an intermittent stream flowing into the East Fork. The site lies on the lower slopes of a dissected secondary ridge. Slope aspect is west. Hill slopes are moderate to the west; steep to the south. There are no natural boundaries to the north and west. The hill slopes to the intermittent stream on the south form the southern boundary. The site lies just north of the juncture of two draws and just west of a third arm of the intermittent stream. The site lies on the southern edge of a long hill. It lies east of 23MC372, and there is a definite break in material distribution. The intermittent stream flows at the base of the hill just south of the site, and the itnermittent stream flows into the East Fork approximately 100 feet to the west. The size of the site is estimated to be 100 feet east-west by 70 feet north-south. Reservoir clearing was only to elevation 794, but the material continued north of the clearing. It is estimated that the elevation of the site is ca. 790-800 feet m.s.l. The original vegetation on the site was oak-hickory forest at the time of the initial survey, and visibility was poor. The site was not discovered until after the reservoir clearing. All vegetation had been removed to elevation 794 m.s.l. and the surface was bare to that point. Visibility was excellent. The surface of the site had been somewhat disturbed by clearing but still appeared to be in a good state of preservation. Material density was relatively low.

MATERIAL COLLECTED

PREHISTORIC

FLAKE TOOLS
- Utilized Flake 1

LITHIC WASTE
- Chert Flakes 4
- Chert Shatter. 1

None of the material recovered is diagnostic of chronological placement, site function, or of seasonality. The utilized flake exhibits one utilized edge. Wear is light and bifacial. It was apparently used in a cutting motion. The only other material recovered is chert waste. This material is indicative of tool manufacture and/or tool maintenance. Little else can be said of the site. We do not have a good indication of activities on the site and the

concommitant site function. All of the sites in this series are very small areally and have very small samples from the surface. There is a conspicuous lack of fire-cracked rock.

This site is located on the left (east) bank of the East Fork. The site lies on a high hill above the river. The site lies on the western edge of the hill. Slope aspect is west. hill slopes are steep to the north, west, and south. The size of the site is estiamted to be 150 feet east-west by 80 feet north-south. The elevation of the site is 785-790 feet m.s.l. Reservoir clearing was to elevation 794 feet m.s.l., and the entire surface of the site was bare. Visibility was excellent. The original vegetation on the site was oak-hickory forest. The surface of the site had been disturbed by clearing but was still in a relatively good state of preservation. Material density was low.

MATERIAL COLLECTED

PREHISTORIC

FLAKE TOOLS
- Utilized Flakes 6

LITHIC WASTE
- Chert Flakes 5
- Chert Shatter 1
- Fire-cracked Rock 3

None of the material recovered is diagnostic of chronological placement, site function, or of seasonality. The utilized flakes exhibit both bifacial and unifacial wear and indicate cutting and scraping activities. Four of the flake tools were used in a scraping motion. The other materials are lithic waste. This material is indicative of tool manufacture and/or maintenance. Little else can be said of the site. We do not have a good indication of activities on the site and the concomitant site function.

This site lies on the left (east) bank of the East Fork. The site lies in the floodplain of the East Fork just south of the entrance of a small intermittent stream into the East Fork. The site is bounded by the East Fork on the west and the intermittent stream along the northern edge. There are no natural boundaries to the east or south. The size of the site could not adequately be determined but is estimated to be 200 feet east-west by 100 feet north-south. The elevation of the site is approximately 765 feet m.s.l. The site was not discovered until after the reservoir clearing. A fish habitat was constructed in the area, and trees had been removed from the area. Heavy equipment movement had also disturbed the surface. Vegetaion originally consisted of forest at the time of the original survey, and visibility was poor. After the reservoir clearing, the surface in the area was bare, and visibility was excellent. The site does not appear to be buried. Material density was moderate. Although the surface has been slightly disturbed by clearing, the site still appeared to be in a good state of preservation. The geomorphology of the site area is unknown.

MATERIAL COLLECTED

PREHISTORIC

LITHIC WASTE
- Fire-cracked Rock. 66
- Unmodified Stone 2

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. The geomorphology of the site is unknown. Although most of the sites in the lower one-half of the reservoir are buried, this site has a surface component. As such, it would appear that the site probably lies on an erosional feature, but no excavation occurred in the area. As the site lies in the floodplain near the river and an intermittent stream, the preservation of the site illustrates stability of floodplain features.

This site is located on the left (east) bank of the East Fork. The site is a buried site in the East Fork floodplain. The depth of burial is unknown. The site lies on the northern exterior of an old meander scar marked by a shallow oxbow lake prior to reservoir clearing. The river was originally located approximately 300 feet west of the site area, and an old channel scar of the East Fork was located just to the south of the site. Site 23MC71 is located in the upland just east of the site. The size of the site could not be determined, as material was recovered from the surface of a tree disposal pit only. There was no material present on the surface away from the pit. The depth of burial and elevation of the site are unknown. The elevation of the floodplain in the site area is approximately 770 feet m.s.l. The original vegetation on the site was mixed alluvial hardwoods. The site was not discovered until after the reservoir clearing. The entire area had been cleared of vegetation, and visibility was excellent. Material was present on the surface of the tree disposal pit only. Material density was low, but the intermixing of material when the pit was filled make it difficult to determine original material density. The portion of the site within the tree disposal pit has probably been destroyed. As the site appears to be buried, we have no indication of the total site area or how much of the site remains intact.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
Distal Projectile Point Fragment
(Figure 209, c). 1

LITHIC WASTE
Fire-cracked Rock. 3

None of the material recovered from the site is indicative of chronological placement, site function, or of seasonality. The distal projectile point fragment indicates hunting was an activity, but the sample size is far too small to have any indication of its relatively importance in the subsistence base. The presence of fire-cracked rock is indicative of thermal activities involving heat retention.

Little else can be said of the activities on the site and the concommitant site function.

This site is located on the left (north) bank of the East Fork. The site lies in the floodplain of the East Fork just west of the juncture of the East Fork with the Long Branch. The site is a buried component. It lies just across the channel of the East Fork from 23MC378. These two sites may have originally been a single site separated by the river. The size of the site could not be determined. The site is bounded by the East Fork on the south, and it was not determined how far the site extended to the north, east, or west. The elevation of the site is approximately 769 feet m.s.l. The original vegetation on the site was mixed alluvial hardwoods. The site was not discovered until after the reservoir clearing. During the reservoir clearing, the sharp meander loop of the East Fork was cut off to the west, and the old channel was used for tree disposal. The capping of the channel removed approximately 30 centimeters of soil from the surrounding edges of the channel. Material was exposed by this action. The depth of deposits is unknown, and it is unknown how much of the site remains intact. It appeared from surficial indications that the site had only been marginally exposed, and most of the site is probably still intact. Material was exposed only near the edge of the channel, and it is estimated that the site is larger but not exposed. Material density was relatively low.

MATERIAL COLLECTED

PREHISTORIC

LITHIC WASTE
- Chert Flakes 4
- Fire-cracked Rock 3

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. It is probable that this site and 23MC378 across the East Fork represent what was originally a single site. If this is the case, the diagnostics recovered from 23MC378 indicate a Late Woodland component. The sample sizes from both sites are far too small to have any good indications of the ranges of activities on the sites or site functions.

This site is located on the right (west) bank of the East Fork. The site lies within the floodplain of the East Fork across from the juncture of the East Fork with the Long Branch. The site was a buried component. It lies on a long, narrow finger between a sharp meander of the East Fork. Although the size of the site could not be clearly determined, the site is estimated to be ca. 400 feet east-west by 70 feet east-west. It was not determined how far the site extended to the west. The site is bounded by the East Fork on the north, east, and south. The elevation of the site is approximately 769 feet m.s.l. The original vegetation on the site was mixed alluvial hardwoods. The site was not discovered until after the reservoir clearing. During the reservoir clearing, this meander loop was cut off and the old channel used for tree disposal. The capping of the channel removed approxiamtely 30 centimeters of soil from the surrounding surfaces. Material was exposed from this capping. The depth of deposits is unknown, and it is unknown how much of the site remains intact. It does not appear that much of the site has been disturbed. The cutoff has disturbed part of the site. It was not determined if material extended west of the cutoff as the surface in that area was not heavily altered. Material density was relatively low.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Straight-based, Corner-notched Projectile Point-Proximal Framgent (Figure 209, d) . . . 1
- Incurvate-based, Corner-notched Projectile Point (Figure 209, e) 1

LITHIC WASTE
- Chert Flakes 4
- Fire-cracked Rock 8

The straight-based corner-notched point exhibits narrow notches. The method of manufacture involving flake blanks and pressure flaking only belong to what White (1968) referred to as subtriangular varieties. They exhibit the later part of the trend in the Middle Woodland to smaller points with similar morphologies to earlier points (cf. Bell

1976:34-35). They range from the late Middle Woodland through the early part of the Late Woodland period. The incurvate-based, corner-notched point appears to belong to the Late Woodland period. Unfortunately, little comparable material was found. The size and chipping pattern do, however, indicate that it belongs to that period.

The remainder of the materials recovered are lithic waste. The sample size of fire-cracked rock and chert waste is very small. The chert waste is indicative of tool manufacture and/or maintenance, and the fire-cracked rock indicates the use of stone for heat retention in thermal activities. Little else can be said of the site.

This sites lies on the right (east) bank of the East Fork. The site lies on the interior of a large meander loop of the East Fork. The site lies in the floodplain of the East Fork and is a relatively shallowly buried site. The site is bounded by the East Fork on the western side. There are no other natural boundaries to the site. The size of the site could not adeuately be determined, but material was collected from an area approximately 100 feet north-south by 70 feet east-west. The elevation of the site is 777 feet m.s.l. The site area was originally in mixed alluvial hardwoods. During the reservoir clearing, the meander loop of the river was cut off south of the site area, and the channel was then used for tree disposal. The capping of the trees in the channel resulted in removal of soil from both sides of tne old channel. The site appeared to have been shallowly buried. The area was completed cleared, and visibility was excellent. The soil was a yellowish-brown which contrasted with the surrounding soil. The geomorphology of the site is unknown, but it is probable that the site lies on an old natural river levee. It appeared that the site had only been slightly impacted. It was not known if all of the site was exposed or not. The site is in a relatively good state of preservation. Material density was low.

MATERIAL COLLECTED

PREHISTORIC

LITHIC WASTE
- Chert Flakes 2
- Fire-cracked Rock 9

None of the material recovered is diagnostic of any chronological period, site function, or of seasonality. The chert waste indicates that tool manufacture and/or maintenance occurred on the site, and the fire-cracked rock is indicative of thermal activities involving heat retention. This is, however, typical of almost all sites in the area. Little else can be said of the site.

23MC380

This site is located on the left (east) bank of the East Fork. The site lies on a low dissected toe slope extending from the hill on the north. This dissected remnant is low and relatively flat, sloping slowly uphill to the north. The site is bounded on the west by the old channel of the East Fork and on the south and east by an intermittent stream. Material is confined to this lower flat area and does not extend upward onto the slopes on the north. The size of the site is approximately 250 feet east-west by 200 feet north-south. The elevation of the site is approximately 780-790 feet m.s.l. The original vegetation on the site consisted of oak-hickory forest. The area was shovel tested at the time of the original survey, but no material was recovered at that time. The site was not discovered until after the reservoir clearing. At that time the area was bare, and visibility was excellent. Clearing had slightly disturbed the surface, but most of the site was in a fair to good state of preservation. The list of material recovered below is not a complete list of materials present on the site. Large numbers of fire-cracked rock were present but were not collected.

MATERIAL COLLECTED

PREHISTORIC

CHIPPED LITHIC ARTIFACTS
- Thin Ovoid Chalcedony Biface (Figure 209, f). 1
- Thin, Narrow Biface with Rounded Base - Proximal Fragment (Figure 209, g). . . 1
- Thin Chert Biface Fragments. 3

LITHIC WASTE
- Chert Flakes 8

The material recovered is not particularly diagnostic. None of the material recovered is temporally diagnostic. The thin, ovoid chalcedony biface is worked largely by percussion and exhibits little or no wear. It is probable that it represents a preform for another tool. The thin, narrow biface with rounded base is a completed tool fragment. It exhibits primary percussion and secondary pressure flaking. Wear is present on the proximal end in

the form of slight edge rounding and flake scar rounding on the faces. It appears to have been used in a motion parallel to the longitudinal axis.

The remainder of the materials are not particularly informative. The three biface fragments exhibit primary percussion and secondary pressure flaking and are fragments of completed tools. Large numbers of biface fragments are typical of most of the sites in the area and illustrate a long use-life for tools and heavy reuse until too fragmentary for further use. The chert waste is indicative of tool manufacture and/or tool maintenance, and the presence of large numbers of uncollected fire-cracked rock are indicative of the thermal activities involving heat retention. Little can be said of the activities on the site and concommitant site function.

CULTURAL USE OF RESOURCES

The potential resources in the river valley have been discussed previously. By a comparison of the potential resources and the actual cultural use of those resources, we get a relative index of "self-sufficiency". Differential use of resources occurs in a seasonal cycle, and the need for particular types of raw materials for the manufacture of tools varies. Self-sufficiency (or lack of it) in the use of local materials carries considerable implications for trade and/or size of seasonal movements. By comparing actual use of resources with potential resources, seasonal movements within or across drainages can be outlined. This is an important part of a cultural ecological viewpoint.

Chert

While chert is one of the most utilized of resources, it is one of the scarcest resources in the reservoir. Local chert outcrops are rare and glacial chert, as we indicated previously, are relatively rare.

The general scarcity of chert is reflected in chert artifacts and in chert waste. Blanks and preforms as well as cores are present on sites in the area, and a mixed strategy of chert procurement is apparent. An examination was made of chert waste from sites to determine the origin of lithic resources.

Two general groups emerged from inspection of the data. The first of these includes white, light blue gray/white, pink, orange, and purple. cortex ranges from less than 1% for the first two colors to 3% for orange and purple. Flake sizes are generally very small. They do, however, vary considerably in shape with slightly expanding to expanding flakes being more common than lamellar or contracting flakes. Striking platforms are often faceted but in general do not make up a large percentage. Striking platforms are generally too thin or fragmentary to make observations. Most of the flakes have the characteristics of bifacial thinning and bifacial trim flakes. These cherts appear to be closest to being non-local materials brought in as blank and preform material. Most of this material appears to come from Mississippian or earlier formations south and southeast of the reservoir area.

The second group consists of black/dark navy blue, tan, gray, cream, various mottled and multicolored cherts, silicified sediments, quartzite, and quartz. All of these

except black/dark navy blue and gray chert appear to be on local glacial origin. These cherts are characterized by 12 to 27% cortexual flakes, and cortex generally exhibits edge rounding and glacial planing. Striking platforms with angles of separation of approximately 90 are present in large numbers on larger specimens. Striking platforms with considerably smaller and greater angles of separation are numerous and probably represent later stages in tool manufacture. The percentage of chert flakes with strong bulbs of percussion is higher than the first group, although they do not constitute a majority of the flakes. Flake sizes range considerably and faceting on striking platforms is not as common as in the first group. Most of these cryptocrystalline materials appear to be of glacial origin.

Gray chert appears to be only slightly more consistently present in assemblages. Cortex flakes constitute about 19% of the total. Flakes with cortex exhibit edge rounding on the cortex but generally lack glacial planing. It appears more probably that this material, which outcrops north of the reservoir area, is river rolled. thus, although probably having a different point of origin, procurement is similar to that of glacial materials.

Black-dark navy blue chert appears to be the only local, non-glacial material. Cortex flakes are extremely common: they range from as low as 13% near the upper end of the reservoir to as high as 42% of the total on one site near the dam axis. Cortex is generally thick, and flakes entirely of cortex are common. Although cortex is thick, cortex exteriors lack either edge rounding or glacial planing. No outcrops of such material were located, but a cursory examination of chert waste indicates decreasing quantities and decreasing percentages of cortex flakes as one moves northward in the reservoir. It is postulated that the source of this material is south of the reservoir area.

Except for the black chert noted above, none of the remainder of the material exhibits any appreciable spatial pattern. Although there appears to be a slightly greater use of local cherts on some of the sites assigned to the Middle Archaic, the distinctive pattern of mixed strategies in chert procurement appears from the earliest sites and probably lasts at least through the Middle Woodland. Late Woodland and later sites exhibit similar patterns but, as we shall see later, this may be the result of other factors.

Glacial Gravel and Cobbles

Glacial cobbles were utilized for a variety of tools. They were frequently employed unaltered for manos, metates, nutting stones, hammerstones, and sharpening stones. They also formed the raw material for axes, celts, and choppers. In addition, they form a large part of the culturally-altered, non-artifactual material - i.e., fire-cracked rock.

Cultural selection of specific kinds of stone from the glacial till is obvious. Manos, nutting stones, hammerstones, and multifunctional tools exhibit a high degree of selectivity. Although some bias in our material types was introduced by the ability to recognize utilization, it is doubtful that the degree of bias is great enough to account for the discrepancy in material types versus stone types present in the glacial till (Grantham 1977). Finer-grained materials appear to have been intentionally selected for these tools. Thus, while argillite and felsite constitute only 10% of the glacial till, they account for more than 50% of the above tools. Coarser-grained materials such as quartzite, gabbro, and granite constitutes almost 70% of the till but account for only 19% of the above tools. The sample of metates is too small to make generalizations, but it appears that, while finer-grained materials may have been preferred, size appears to have been the governing criteria. Likewise, our sample size for celts and other ground and pecked stone is too small for any generalizations about selectivity.

In the case of fire-cracked rock, however, there appears to have been no real selective process. Stone types exhibit no selectivity, and appear to be fairly close to the types of materials in the till. Finer-grained materials are sometimes slightly more common than in the till, but this appears to be largely the result of selection of material for tools.

Stone from fire-cracked features is almost the same in proportions to that in the river and in secondary streams in the immediate areas.

Hematite

Axes and adzes of hematite have been recovered from the area and are present in most collections in the area. Chipped hematite probably represents initial steps in tool production. A number of pieces with ground faces or edges appear to have been rubbed with no tool form in mind, and were probably being used as a source of pigment.

Flint Hill Sandstone

This material appears to have been used as a source of raw materials for tools only in areas where other types of stone are relatively rare. Flint Hill sandstone appears to have been heavily utilized as a source of heat-retaining rock in the area of outcrops. Indeed, Flint Hill sandstone appears to have been purposefully selected, as percentages are somewhat higher than those found in the modern stone samples.

Micaceous Sandstone

This material appears to have been utilized only occasionally for its highly abrasive qualities. It was, however, heavily utilized as a source of heat-retaining rock and seems to ahve been selected for this purpose, as percentages are somewhat higher on sites than occur in the streams and river near where it outcrops.

Higginsville and Houx Limestone

Neither of these formations were especially used as sources of raw material for tools. They do, however, appear in deep earth ovens and in other deep features. They seldom appear anywhere else on sites and may be used as markers for these features.

Shales

Shales were seldom used by populations in the area. Most of the recovered shales have the character of accidental inclusions. Shales do not perform well in heat-retention, and they have no other apparent use.

Clay

Clay was an important resource for Woodland populations in the area. Pennsylvanian clays are massive and shaley and were not used. Pleistocene clays resulting from soil horizonation was the only clay used. This clay contains small to moderate amounts of sand, and all ceramics in the area contain similar amounts of sand.

Summary and Interpretations

Local resources constitute the bulk of raw materials for tools, especially of seasonal-related tools - i.e., manos, metates, nutting stones, and hammerstones. This is hardly surprising as these materials are not likely to be transported very far by hunting and gathering groups. The presence of heavily utilized items and the caching of tools would indicate that specimens were stored rather than making new tools from the readily available sources. There appears to have been a high degree of selectivity for raw material for ground and pecked stone, with finer-grained stone being preferred for these tools.

The mixed strategy in the procurement of cherts, however, was due to the fact that although there was enough local chert from the area to manufacture chipped stone tools, some stone was imported. Caching of blanks and preforms has already been noted.

This "self-sufficiency" or reliance on local resources for tools related to seasonal activities (and the lack of the above in regard to the strategy of procurement of raw materials for tools less seasonally oriented) reveals an interesting system. As noted in the introduction, this system has implications for how these non-local raw materials were obtained. Trade and/or seasonal movements which include those areas where raw materials were available would appear to be the most viable alternatives. The lack of exotic trade goods (especially from burial mounds) (c.f. Shields 1966b) and the lack of widespread decorative motifs and trends from other areas tend to argue against an active trading system. It does not, however, argue against a trading system in which exotic trade items and their implications for status were not important.

A system which involves seasonal movements through an area where non-local cherts were available is also a plausible alternative. As we shall see later, the entire reservoir represents a seasonal-specific area, and only a small segment of the total settlement-subsistence system is represented there. The total settlement-subsistence system probably embraced an area including most of the East Fork and other parts of the Chariton system. As sources of the non-local cherts appear to be along the south edges of the East Fork and the Chariton and to the southeast in the Salt system, it would appear that at least part of the settlement-subsistence system consisted of these areas. Whether one or both of these processes are operated within the system must, however, await considerably more work over a large area.

FUNCTIONAL IMPLICATIONS

As Winters (1969: 30) and others have pointed out, ideally functional analyses should be based on experimentation by subjecting forms to a number of usages and basing functional interpretations on types of wear. Although some steps in this area have been made (e.g. Ahler 1971, Coles 1973, Semenov 1964, and Sonnenfeld 1963), general utility tools (i.e. classes such as bifaces) have largely been excluded from such analyses. In general morphological classes also vary from area to area so that applications of such functional studies probably have a limited areal range. Thus, without detailed analyses of wear patterns on all tools, discussion of functional interpretations are somewhat limited. Such an undertaking was simply not feasible.

Although the possibility and the value of functional studies are no longer questioned, the means for deriving such implications are somewhat more varied. The use of ethnographic analogy for deriving functions as used by Winters (1969) poses some problems. Winters provides a convincing argument for the use of ethnographic analogy, and we would resist its use. However, the argument that there is a broad temporal continuum which has been maintained and that basic tools have not been replaced is a fallible one. While cautioning the reader that within-group variation does exist, the view of a broad continuum implies that such internal variation must be minimized, and that ethnographic analogy may be applied largely without regard to time and space. This is defeating in anything but the broadest interpretations. Likewise, Winters (1969: 111) has noted that not only have the loci of subsistence activities changed, but the very means whereby society partitions itself to effect the latter have changed.

However, we cannot argue that we do not use such analogies, as the terms "projectile points", "drills", or "axes" imply ethnographic correlates. A projectile point is not that by its inherent qualities but because it was observed in that function. These are broad generalizations which occur largely without regard to time and space. That they have been observed in other functions does not override those generalizations unless these observations exceed the incidence of primary generalizations. Thus, a projectile point is still a projectile point as long as it is observed primarily in that function. That it is also used as a cutting tool does not override the generalization but is responsible for creating considerable intra-group variation of wear patterns.

Thus, generalizations can be made on classes with ethnographic correlates. The following tool functions are discussed not in terms of individual artifacts but rather in the broader spectrum of classes of activities. Individual artifacts are included as examples only where primary observables warrant such inclusions. These classes are based largely on primary observables (i.e. method of manufacture, general morphology, and wear characteristics) and are made in reference to the above ethnographic correlates as well as to functional studies by others. Temporary or incidental tools (retouched and utilized flakes and fire-cracked rock) can only be interpreted in general terms, and wastage (fire-cracked rock, chert waste, and fragmentary tools) as well as intermediate forms (blanks, preforms, cores, and in some instances chipped hematite) have largely been excluded. Although the latter are not directly tools, they may be informative as to functional areas on sites. Without a more careful study of some tools, their inclusion in any category would be highly questionable.

Classification of tools by activity sets have been proposed by Winters (1969) and these have largely been followed here. Only five functional categories may be recognized in the material analyzed. These are: hunting implements, fabricating or processing tools, domestic tools, woodworking tools, and adornment or ceremonial equipment. In addition, a category of miscellaneous artifacts includes a number of artifacts with undetermined functions. Their limited numbers and largely individual forms and wear patterns make them of limited utility in discussing broader patterns of functions. They have, however, been included in this discussion since they do constitute potentially identifiable functions which occurred on these sites. Without more rigorous controls through experimentation, they must remain largely unidentifiable as to function.

Hunting Implements

Projectile Points

In the sections on Material Descriptions from individual sites, projectile points were categorized by morphological characteristics and temporal implications were presented in the Site Assemblage sections. Cherts as natural resources and the utilization of local and non-local cherts were discussed under the section on Cultural Use of Resources and individually under the Site Assemblage sections. A discussion of artifact assemblages appears in the following section. Several other observations appear appropriate at this juncture, however.

Projectile points appear to be the principle artifacts produced from chert in the area. This provides a relative index of the importance of projectile points to other tools - i.e. other tools such as knives may be combined into multifunctional tools or dropped entirely from tool kits. Intermediate forms (blanks, preforms, and cores) and projectile points make up the bulk of the recognizable artifacts. In addition, a large part of the remaining artifacts are by-products of expended projectile points (e.g. hafted scrapers, end scrapers made from distal projectile point fragments, and drills). Most of the rest of the chipped chert artifacts are flake tools (e.g. end scrapers and utilized and retouched flakes).

This is an extremely complex category. Ahler (1971) has quite adequately demonstrated that within the morphological class "projectile points" there is considerable variation and that multiple functional classes exist. These were later (Ahler and McMillan, 1976) divided into projectile points (PP), projectile points/hafted cutting tools (PP/HCT), and hafted cutting tools (HCT). These classifications are based on a sample of tools from a universe where the population had virtually unrestricted availability to raw material for chipped stone tools. The physical location of Long Branch reservoir, however, resulted in a restricted access to raw materials for the populations producing those recovered artifacts. The assumption that there is a point size below which items are more likely to have been used as porjectiles than hafted cutting tools and large sizes more useful as hafted cutting tools than projectiles (Ahler and McMillan 1976:166-167) is, therefore, not necessarily valid for our sample. From a functional viewpoint, however, shear access to raw material need not necessarily affect those perceptions. It appeared initially that this same functional difference was true for the Long Branch sample. In order to check this, the size distinction indicated by Ahler and McMillan (1976) was used to divide points into the various functional classes. Only three specimens falling into the HCT category were recorded, based on size, so the functional class was dropped. Observed fracture patterns are indicated in Table . Specimens recovered from the original survey (Grantham 1977) and testing in the reservoir (Grantham 1979) were utilized as well.

These percentages indicate that there is only a slight increase in transverse blade fractures and concomitant decrease in impact fractures as size increases. While there is a slight indication of functional differences, none of the figures indicate strong trends. It is probably only an indicator of the size distinction and the fact that small

points are less likely to be functional as cutting tools. The relatively high incidence of transversely fractured small points is indicative of their use as cutting tools.

The major unsuspected difference between the Long Branch sample and that from Rodgers Shelter is the very low percentage of impact fractures on both projectile points and projectile points/hafted cutting tools. Initially these percentages indicated that almost all of the specimens were used as cutting tools rather than projectile points. This clearly did not fit well with expectations, and it was believed that this phenomenon was artificially created. As a large number of fractured points and other chert tools exhibited a high degree of reworking, it was anticipated that this was a partial explanation. In order to test this, we decided to examine distal projectile point fragments. While lateral recycling of distal fragments occurs (cf. Grantham 1977), it was decided that reworking was less likely to occur. A sample of eighty-one distal point fragments were examined, and thirty-six specimens (ca. 45 percent) exhibit impact fractures as well as proximal blade fractures. It is suggested that this is indicative of reworking of specimens to remove impact fractures or that continued usage of impact fractured points as cutting tools results in a high percentage of transverse fractured blake segments with distal impact fractures. The former would appear more likely, especially in light of the small sizes of many of the projectile points.

In summary, it appears that the difference between projectile points and projectile points/hafted cutting tools is probably not a valid one for the Long Branch sample. The percentages are not markedly different and indications of cutting activities are high. If all blade fractures are considered, the percentages are very high, and it is probably indicative of heavy use of these specimens in cutting activities as well as their use as projectile points.

The general scarcity of chert noted previously is manifested in three major attributes of projectile points. The first is resharpening. Probably one of the first differences noted between artifacts in the reservoir area and areas of more plentiful chert resources is the relative crudeness of artifacts in the former. Tools which are broken early in their use-life often exhibit good technological workmanship. The relative crudeness of the artifacts appears largely to be the result of resharpening. Tools are first resharpened by pressure until this becomes difficult and are then resharpened by percussion. Tools with carefully worked bases and blades worked by percussion

are not uncommon. Most of the complete artifacts recovered have been resharpened to the point where they no longer perform the function for which they were intended - i.e. edge angles on projectile points approach ninety degrees. Even though such cutting uses of points are noted in other areas, the degree of such usage in the reservoir area is extreme. The fact that resharpening often causes discard before the artifact has reached the end of its use-life as a projectile point might imply that individual cutting tools might be more advantageous. These are not, however, present in our sample.

The second major attribute is reworking. Reworking of broken or expended projectile points into other forms can be noted in a variety of artifacts, and attempts to rework others are often noted. Proximal point fragments are sometimes reworked into hafted scrapers, and an even greater number exhibit partial reworking before final discard. Distal projectile point fragments are sometimes reworked into end scrapers (Grantham 1977). Reworking of points with extreme edge angles into drills is common. In general, however, the small number of these tools compared with the large numbers of unreworked proximal and distal point fragments and points with extreme edge angles indicate that these are tools produced only when needed. This reworking of points into other forms illustrates a principle of *secondary raw material*. As projectile points appear to be the principle tools produced from primary raw materials, it is not surprising to find expended projectile points utilized as secondary raw material for other tools.

The third major attribute is curation. The degree of both resharpening and reworking of complete and incomplete tools indicates that the degree of curation of chert artifacts is extremely high. This is also illustrated by extremely high percentages of fragmentary tools on all sites. Curation makes chronology in the area more difficult, as projectile points are our main chronological indicators. With a heavier usage of projectile points as cutting tools along with their primary function, it appears in general that projectile points would not greatly outlast the chronological period in which they were manufactured. It does, however, make chronological assignments with small amounts of diagnostic material very tenuous. Sites such as 23MC65 and 23MC74 with Archaic points recovered from the plowzone or surface of the sites but lacking Archaic components in the excavated stratigraphy indicate that curation and borrowing of earlier materials not only occurs but may be fairly common. Such curation means that sites have often been one of the greatest sources of raw materials, and, as we shall see later, must be accepted as

TABLE 100

Fracture Type Percentage by Compared Functional Classification of Points from Long Branch Survey and at Rodgers Shelter*

	Impact Fracture	Transverse Blade Fracture	Other Fractures**	Unfractured	Total
Long Branch Projectile Points	8%	47%	8%	37%	100%
Rodgers Shelter Projectile Points	31%	42%		27%	100%
Long Branch Projectile Points/ Hafted-Cutting Tools	6%	51%	21%	22%	100%
Rodgers Shelter Projectile Points/ Hafted Cutting Tools	26%	43%		31%	100%
Rodgers Shelter Hafted Cutting Tools	10%	70%		20%	100%

*Ahler and McMillan 1976:170
**Oblique stress, compound, and thermal fractures

one of the greatest mechanisms for explanation in settlement and subsistence patterns. This is undoubtedly one of the greatest contributors to the highly complex nature of sites in the area.

Thus, projectile points served multiple functions. Although their primary function was probably as projectile points, they also served the secondary function of cutting tools, and tertiary uses as raw materials for other artifact classes.

Fabricating or Processing Tools

These tools were used largely for the production of other tools and/or goods. Thus, while being tools themselves, they form an intermediary between raw material and finished goods.

Chert working tools

It would appear that lithic reduction and resharpening of tools was an important activity on all sites from the amounts of chert waste present on sites. However, few tools which are readily identifiable as chert working tools are present. While it is quite probable that a number of these tools were made of materials which have in general not survived (e.g. antler), there are tools which were probably linked to the chert working process.

Most tools appear to have been shaped using both percussion and pressure. Although there are not tools which were used for pressure working which have survived in the samples, a number of probable percussion tools are present. Pebble hammerstones and battered stone are often characterized by wear which indicates direct contact with dense materials. Although all of the specimens in this category are probably not a part of the chert working process, most of the smaller specimens are believed to be part of that process. Larger specimens are believed to be too massive for knapping chert, but it is quite probable that they belong within the general class of fabricating or processing tools.

Likewise, a number of chert hammerstones are relatively small and are characterized by wear which indicates direct contact with dense materials. Those specimens which are characterized by edge crushing and edge shattering may have been part of the chert working process. Larger specimens are often characterized by edge crushing and edge grinding.

These specimens appear to be more closely linked with pounding and pulverizing processes involved with plant processing (cf. Winters 1967: 14).

Drills/reamers

Although drills and reamers are two separate functions, the distinction is usually made on the relative sharpness of the point. Artifacts are generally classed as drills when the point of the tool is sharp, and as reamers when the point is dull. This distinction is a difficult one to make as there is seldom a clear cut distinction between the two. Likewise, most of the tools in our sample are fragmentary, making such a distinction impossible. Most of the other categorizations have made no distinction between the two, and such a distinction without wear pattern studies is somewhat dubious. The distinction between the two is largely a morphological one (viz. width). Both pointed and dull specimens are present in our sample.

Questions have been raised about the validity of the term "drill", as a large number of these tools often lack heavy wear indicative of rotary motion. Winters (1969: 55) based the distinction on the presence of numerous hinge fractures on the utilized edges of drills and the lack of these on reamers. If we utilized such a distinction, most of the specimens would have to be classed as reamers. Most of the secimens lack indication of heavy wear on the distal end and would appear to have most likely served as reamers.

Gravers

Gravers are usually defined as small spurs on flakes or on other tools. They appear potentially usable for a variety of functions, although incising bone or other materials softer than chert appears to be a primary function. Specimen 28:a from 23MC56 exhibits wear which is characteristic of use as a graving implement. Wear consists of edge rounding, edge crushing, and polish which extend a very short distance from the point. The material which was incised can not adequately be determined. Also, the morphology of this tool is not that of small spurs on flakes but is rather a pointed retouched biface fragment.

Scrapers

Scrapers may have been utilized for a variety of functions. Winters (1969: 32) notes that they could have

been associated with hunting, domestic, fabricating, or even wood working activities. Certainly the variety of scraping activities illustrated by types of scraping tools within the sites examined by Winters would lead to such a conclusion. Scrapers have, however, been included here as fabricating or processing tools rather than general utility tools. This is based on the fact that types of scraping tools in our sample are considerably less diverse and that all have been observed ethnographically in functions relating to fabricating and processing. Types of scrapers such as V-bit scrapers and spokeshaves are lacking. Likewise, wear on specimens appears to be characteristic of usage on pliable materials such as hides. Thus, they are almost certainly part of a fabricating process.

The numbers of scraping tools would indicate that this was a relatively important activity. Large side scrapers were recovered in the survey (Grantham 1977) but are lacking from the excavated sample. Flake scrapers recovered are largely end scrapers. Hafted scrapers have been made from expended projectile points.

Hammerstones

Although some of the specimens in this category appear to be largely chert working tools, a number of the larger specimens are believed to be too massive to be involved in that process. However, their wear pattern characterized by direct contact with dense materials would indicate that they were involved in fabricating or processing activities. The more diffuse patterns of battering on ground, pecked, and battered stone and the presence of edge grinding on larger hammerstones are more indicative of plant processing tools. Likewise, some of the chert hammerstones may have been involved in processes not related to chert working. Again, wear characterized by edge crushing would indicate direct contact with dense materials.

Abraders

Abraded sandstone comes in a variety of forms. Specimens with flat, ground faces are common. Specimens with large, flat faces may have belonged to other functions (e.g. plant processing), but there is no direct evidence for such a function. Small, flat ground pieces of sandstone appear to have been utilized in creating flat or smooth surfaces on other tools or for grinding pigment. All appear to have been too small to have served other functions. A large number of specimens exhibit grooves on the faces and

have been utilized to smooth cylindrical and/or pointed tools.

Retouched flakes

A number of the retouched flakes can be associated with activities involving production or processing of goods. Many of the retouched flakes exhibit steep-angled edges and unifacial retouch. They appear to have been utilized in a scraping motion, although the nature of the material being processed is unknown. Edge damage also indicates that they were utilized in a scraping motion. Acute-angled specimens largely have been utilized in a cutting motion. Edge damage is not uniform and may be a function of the longevity of usage or of differential nature of the materials being worked. Thus, although some may have been utilized in food processing, others appear to have been connected with processing of materials into finished goods.

Utilized flakes

A number of utilized flakes also appear to be associated with activities involving production or processing of goods. The utilized flakes have been utilized in both cutting and scraping motions. Again, as with retouched flakes, edge damage is not uniform. While certain cases have differences in the degree of edge damage as a function of the longevity of usage, other cases have resulted from the differences in the nature of the materials being processed. Thus, it is estimated that while some specimens were utilized in food processing, others appear to have been connected with processing of materials into other goods. At the present level of analysis, no attempt to classify degrees of edge damage or specific wear types so that meaningful statements on specific function interpretation was possible.

Utilized fire-cracked rock

As with most of the incidental tools, functional implications are only generally made as detailed analyses of wear patterns on tools have not been performed. Likewise, identification of wear is generally not possible until the degree of wear is fairly heavy. Two major classes of wear and morphology are detectable. Large thick pieces of fire-cracked rock exhibit heavy edge damage (generally bifacial) and appear to have been utilized in a chopping motion. The other class consists of smaller thin pieces of

fire-cracked rock with a lighter degree of edge damage. Edge damage is usually bifacial as well, and the specimens appear to have been utilized in a cutting motion. As the type of materials being processed is the actual determination of the functional classes, specimens have been included under both domestic tools and fabricating or processing tools. As the nature of the materials being processed is uncertain, it appears that they were probably utilized in both activity classes.

Domestic Tools

Although the title of this category is somewhat deceptive in terms of the relationship of artifacts within the class, the term used by Winters (1969) has been retained. Artifacts within the class are largely oriented toward the processing of gathered food materials, but the class has been expanded to include all tools related to processing and storage of food materials. The class has been subdivided in order to make the distinction between plant processing tools and other aspects, as this will become important in the discussion of subsistence presented in a later section.

Plant processing tools

Manos

Ground stone and complex tools including ground faces are fairly common. Manos as single usage tools are not as common as other modified stone. An examination of the ground stone recovered indicates that most of the recovered specimens are too fragmentary to determine if their sole function was as a mano. Several possible metate fragments have been included in the category as well. The presence of a proportionately smaller number of complete specimens with grinding as their sole modification would tend to indicate that a large number of ground stone fragments were probably portions of more complex tools.

Nutting stones

Pecked or pitted stone constitute by far and away the largest number of ground and pecked stone present on sites. Pitted stone and complex tools including pitted faces are all common. References to these tools are usually included as pitted manos, anvilstones, anvils, or pitted

hammerstones; the distinction often confusing and depending on the complexity of the tool. Replicative work (Baker 1975) would tend to indicate that these pitted faces are largely the result of cracking nuts. The characteristics of wear on these specimens indicates that the diffuseness of the peck marks are not the result of direct contact with dense materials. This differentiation between use as anvilstones and as nutting stones has been noted by Baker (1975) as well.

Complex tools

Complex tools including combinations of the above two and battering on the edges and ends are also numerous. Wear is characterized by patterns identical to manos and nutting stones on the faces. Battering on the ends and edges is usually not similar to that on pebble hammerstones. Battering on these tools is more commonly identical to the pecking on the faces and is characterized by diffuseness of the edges of the battering marks. Thus, it would appear that battering on the ends and edges is intimately related to nut processing rather than direct contact with dense materials. This may also be seen in that pitted faces and end and edge battering often occur together, while ground and battered stone is only rarely present. Only a few of the specimens exhibit battering on the ends or edges characterized by direct contact with dense materials.

Metates

Metates are considerably less numerous than other plant processing tools. Specimens are usually characterized by light grinding which has removed the cortex and smoothed the surfaces. The general lack of striations and the polish on ridges would indicate that the material ground was not coarse or gritty. Plant products are suggested as the material being ground. Although manos almost invariably outnumber metates on sites in the Midwest, it is always noteworthy. Likewise, the degree of grinding on specimens is generally less than on manos. Although usage of two manos for grinding materials is often cited as an alternative, this is not as viable an alternative as it would initially appear. Almost all manos are bi-convex in both transverse and longitudinal cross-section. This would make using two manos difficult at best and would result in a "staged" or faceted wear pattern on the faces of the manos. This is not the case on the specimens examined. Another alternative is suggested, but no immediate link to other materials in our sample is possible.

Multiple-pitted stone

Multiple-pitted stones are most commonly referred to as nutting stones or cupstones. All of the specimens recovered exhibit rough interiors in the pits and lack any evidence of rotary motion. Specimens have pits with wear in the pits quite similar to that noted on the pecked or pitted stone and appear to have been utilized as nutting stones. They differ only in relative size (specimens are considerably larger) and have multiple pits rather than single pits on the faces. In all cases, actual pits have been created. It is not readily apparent whether the pits were generated through usage or if the pits were generated prior to actual usage, although it would appear that the latter is more likely.

Hammerstones

Although hammerstones appear to be associated with a variety of functions, Winters (1967: 14) has noted that much of the wear seen on hammerstones (i.e. rounding or grinding on edges) is the result of pounding and pulverizing vegetal materials. This seems quite likely in light of the fact that some hammerstones (particularly chert hammerstones) are fairly large and are characterized by both edge crushing and edge grinding. Specimens recovered from 23MC65 in a cache of hammerstones (Grantham 1979) as well as in surface collections (Grantham 1977) are characterized by similar wear.

Food processing and storage

Pottery

Pottery may be generally associated with food storage or food preparation. Most of the material recovered appears to be utilitarian ware and was not designed for long-term usage. Although apparent functions are more easily determined than those of biface fragments, they cannot be treated on a similar basis in the following sections. Sherds represent an undetermined number of artifacts (i.e. hundreds of sherds may represent a single vessel). Likewise, their comparability to materials from Archaic sites is not direct. Materials which would be comparable in function are either not preserved or are not present in the recovered material.

Utilized fire-cracked rock

As with most of the incidental tools, functional implications are only generally made as detailed analyses of wear patterns on tools have not been performed. Likewise, identification of wear is generally not possible until the degree of wear is fairly heavy. Two major classes of wear and morphology are detectable. Large, thick pieces of fire-cracked rock exhibit heavy edge damage (generally bifacial) and appear to have been utilized in a chopping motion. The other class consists of smaller, thin pieces of fire-cracked rock with a lighter degree of edge damage. Edge damage is usually bifacial as well, and the specimens appear to have been utilized in a cutting motion. As the type of materials being processed is the actual determinant of functional classes, specimens have been included under both domestic tools and fabricating or processing tools.

Retouched flakes

Again, functional implications are only generally made as detailed analyses of wear patterns on tools have not been performed. Although most of the retouched flakes appear to be more imtimately connected with fabricating or processing activities, some retouched flakes, especially those with acute working elements, exhibit less severe edge damage and may have been connected with food processing (e.g. animal processing).

Utilized flakes

Most of the utilized flakes appear to be more intimately connected with food processing. They have a lighter degree of edge damage than could be expected with fabricating or processing activities. While the degree of edge damage in certain cases may be a function of the longevity of usage, other specimens exhibit evidence of edge damage resulting from differences in the materials being processed. It would appear that the majority of these tools were utilized in light duty cutting activities and appear to be associated with food processing.

Wood Working Tools

Axes

Axes are not common in the material recovered. An examination of collections in the area, however, suggests

that they may be somewhat under-represented in our sample. Specimens are often characterized by wear which would indicate usage as an axe (i.e. heavy edge crushing and shattering). While the axe recovered from 23MC56 is fragmentary, the axe fragment recovered from 23MC142 exhibits heavy edge shattering with numerous flakes driven up the faces. Axes recovered during the survey (Grantham 1977) indicate that wear patterns are similar with heavy edge shattering and flakes driven up the faces.

Celts

Celts are also not common in the material recovered, but an examination of the private collections in the area indicates that they may be somewhat under-represented. Specimens exhibit wear characterized by edge crushing, edge rounding, and deep striations extending up the faces. This would indicate that the specimens were utilized in an adze-like motion.

Chert adze-like tool

One specimen from 23MC362 exhibits wear which is apparently related to wood working. Wear is characterized by edge crushing, polish, and striations extending up the faces. Although the wear pattern is in several respects similar to adzes, the presence of polish on the faces does not appear on celts. This may be a result of the difference in material. The specimen exhibits edge shattering on the proximal end and heavy edge rounding on the lateral margins in the areas where the specimen would have been hafted. The specimen is provisionally placed in this class.

Adornment or Ceremonial Equipment

This is by far and away the most provisional of classes. Any artifact with primary functions of aesthetic or adornment purposes may also have had ceremonial contexts. Without the contexts of these artifacts, any placement must be extremely provisional. To that end, the class has been termed adornment or cermonial equipment. Until contextual information is available for artifacts, this class must remain a rather broad one.

Ground hematite

Although hematite is often used as raw material for tools (e.g. axes and celts), the ground hematite in our sample was largely ground only for pigment. The purpose for such pigments is, however, undetermined. It is possible that such pigment may have been used for personal adornment or decoration of personal goods. By the same token, such pigment is also noted as occurring with burials throughouth the Midwest, where its context appears to be a ceremonial one (cf. Winters 1969: 79-82). In the excavation of Axton mound (Shields 1966b: 39-41), Marshall noted what he believed to be yellow and red ocher. Our examination of the mound revealed a large amount of Higginsville limestone, which is very high in iron and weathers to a yellowish-brown ochrous color. Whether this was what Marshall noted can not be determined.

Scratched hematite

Like ground hematite, the resulting material would appear to have been a powdered hematite whose use would have been for pigment. These specimens differ from ground hematite. While ground hematite was ground on fine-grained abrasives (e.g. sandstone), these specimens appear to have had their surfaces altered with the use of another tool. The grouped striated surfaces resulted from shaving the surface with a chipped stone tool. Specimens appear to have had the hydrated surfaces scraped for pigment.

Incised stone

The single piece of engraved stone recovered from 23MC69-4 (Category 12) was the only identifiable specimen recovered which is clearly not a tool or intermediate form. The specimen exhibits two shallow lines on one face and three deep notches near one edge. Although the specimen is clearly not a tool, the reason for the modification is unknown. It may be assumed, however, that since there are no clear function specific implications relative to the specimen, that it belongs in the general class of adornment or ceremonial equipment.

Miscellaneous Artifacts

As is often the case, a number of artifacts were recorded which present problems in classification. Their

primary attributes (morphology and wear) do not lend themselves to easy classification at this time.

Bifaces with undetermined functions

Of the total complete and proximal biface fragments recovered, some sixty-nine percent have little or no observable wear. Of the remaining bifaces and biface fragments, a wide variety of wear patterns are present. Without a detailed analysis of wear, there is little to be said of those bifaces with regard to functional interpretations. Those specimens with little or no wear generally appear to be intermediate forms (i.e. blanks and preforms) and thus have no functional interpretations as they were not utilized as tools. The bifaces with wear are often highly individual, and wear patterns differ significantly from specimen to specimen at a macroscopic inspection level.

Heavily facially battered cobbles

All of the facially battered cobbles can not adequately be placed in any of the above classes. Although they would appear to be true anvilstones (cf. Baker 1975), their nature makes placement in a class difficult. It is conceivable that materials such as chert were worked on the surface, which would place them in the fabricating or processing class. It is equally possible that they represent anvils for cracking bone for marrow extraction, which would place them under domestic implements. As there is no indication of the materials being processed on these tools, it is not possible to place them in any of the functional classes.

Chipped cobbles

At least one specimen in this general category (Category 26 - 23MC74) may have originally been in the process of being shaped toward an axe. The wear on the specimen does not, however, indicate that it was used as an axe. Heavy edge rounding is present along one edge of the cobble. The function of the tool is uncertain. The other chipped cobbles recovered from the sites do not appear to have been utilized at all and appear to have been in the process of shaping for tools. Some appear to have been chipped in a core-like manner with the resulting flakes representing the raw material.

Modified stone

A single specimen (Category 11 - 23MC69-4) exhibits a void in the argillite pebble. The outer edges of the void have been modified. It was intentionally expanded by using a tool in a scraping motion to remove material. The reason for the modification is unknown.

ASSEMBLAGES AND RELATIONSHIPS

Many of our original statements on asseblages and external relationships are in need of major revision (Grantham 1977: 197-197). The statement that any discussion of assemblages and assemblage structure derived from surface collections must be treated as speculative in nature is indicative of the fact that the statements on assemblages made in the survey report were advanced as hypotheses for testing. Surface collection data is not the best possible basis for the definition of assemblages. Such a definition of assemblage structure is more adequately based on data derived from excavations.

Our original body of data for the definition of assemblages (Grantham 1977) was, naturally, based almost exclusively on material derived from surface collections. Much of the data derived from surface collections came from heavily disturbed sites simply because larger samples were available. Unfortunately, a number of these sites were multicomponent. Several sites were necessarily treated as largely single component. Although surface material tended to indicate that sites were single component, they might be considerably more complex. We attempted to use largely single component sites or sites where components appeared to be separable. Thus, the assemblages derived were somewhat speculative and were proposed as hypotheses to be tested by the mitigation program. In some areas, further collections have not greatly enhanced our knowledge of assemblages while in other cases some modifications were required.

On sites with excavations, our proposed assemblages appear to be in great need of revision. Data derived from the excavations not only provided us with a greater number and range of potentially diagnostic artifacts but also indicates that some material recovered from the surface of the sites is not present in the stratigraphy. Thus, although some sites appeared to have certain components present on them, excavations revealed that the "diagnostic" artifacts were, in some instances, curated materials and were in effect not diagnostic of components on the site. Thus, excavations on some sites revealed that they were not as complex as originally believed, while in other cases the opposite is true. The assemblages to be presented in the following discussion have not been completely revised nor have the discussions of external relationships.

Paleo-Indian

As yet no evidence of groups inhabiting the area and producing fluted forms of projectile points has been found. These forms, have, however, been found on sites to the west along the Chariton River. Although several reasons are often cited as plausible explanations of the absence of this material, none can be readily accepted.

The Des Moines lobe of the Wisconsin glacier was still located in northern Iowa until approximately 11,500 B.P. (Bryson and Wendland 1967). While certainly having a profound effect on the vegetation of northern Missouri, it would not have had a limiting effect on the distribution of populations there. Spruce forest covered the area as noted in areas to the south (Mehringer et al. 1970), to the west (Gruger 1970 in Wright 1970), and to the north (Shay 1971). The decline and destruction of the spruce forest with the retreat of the Laurentide ice sheet saw the establishment of the Prairie Peninsula in the Midwest (Wright 1968). Thus, although vegetation differed significantly, we might expect differing settlement patterns but not a total absence of material on the basis of differences in vegetation alone.

Erosion and valley fill have often been cited as primary explanations for the absence of sites with fluted forms. These do not appear to be plausible hypotheses in the reservoir area. The Chariton system would not have been a major outlet for glacial melt, and the system does not appear to have been especially active in meander cutting since the end of the Pleistocene. Large Kansan till remnants are still located in floodplain settings all along the East Fork. The river valley has been almost constantly aggrading since the end of the Kansas glaciation, and buried sites are numerous. While buried sites do exist in the river valleys, it seems statistically implausible to argue that all such forms are buried or have been eroded by the river. By the same token, it would appear doubtful that erosion (even though erosion is still active in secondary streams) could have removed all traces of prior material from hills bordering the floodplain.

It appears best not to attempt explanations of why certain material is not present but to examine the distribution of materials which have been recovered. Without a fuller knowledge of regional settlement patterns, to attempt to explain nonexistent data is no explanation at all. For the present, we will accept the premise that

Paleo-Indian utilization of the area is minimal at best. The presence of fluted forms along the Chariton River would appear to add information which agrees well with Chapman's (1975: 67) observation that where specific locations of sites that had Clovis Fluted or Folsom Fluted could be determined, they were on the hills and terraces adjacent to or within a few miles of the main streams.

Dalton

Dalton Serrated (Chapman 1975: 245-246) and Dalton-like forms are relatively common throughout the Chariton system. Almost all collections from the Chariton River valley examined contained Dalton-like forms. Unfortunately, contextual information on most of these is lacking. Thus, we have no measure of whether these forms belong to Chapman's (1975) proposed Dalton period or whether they belong to Early Archaic sites. As Chapman (1975: 97) has pointed out, Dalton Serrated may have lasted for a relatively long period, overlapping with a variety of projectile point and knife types. The only Dalton-like projectile points recovered from 23MC65 appear to be more typical of the Early Archaic. Neither of these were recovered from the excavations, and there is no identified Archaic component in the excavated stratigraphy. These points, although exhibiting many of the characteristics of Dalton Serrated (Chapman 1975: 245-246) are closer morphologically to concave-based lanceolate forms from 23FR7 and 23FR8 (Chapman 1975: Figs. 4-16, 4-17, and 4-18). Thus, we have no strong evidence from the reservoir that would indicate a Dalton period occupation, while the number and variability of Dalton-like forms from elsewhere in the Chariton system is highly suggestive of Dalton period occupations.

Early Archaic

It is possible that the earliest occupation in the reservoir area occurred in the Early Archaic period. Forms such as St. Charles Notched and Hidden Valley Stemmed (Chapman 1975) are as yet absent from collections and excavations in the reservoir area. Dalton-like and possibly Hardin-like materials (Grantham 1977) have possible Early Archaic affinities.

On the other hand, side-notched forms such as those from Horizon II of the Cherokee Sewer site (Anderson 1974) are present in collections from the reservoir area as well as in private collections from the area. In addition, other

side-notched, concave-based points were found associated with the Dalton-like projectile points from 23MC65 as well as occurring with Dalton Serrated points from the Dalton site (Chapman 1975: Fig. 6-6). One of the points from the former exhibits extreme basal thinning on one face which approaches fluting, as basal thinning runs almost the entire length of the face. Unfortunately, these materials recovered from 23MC65 appear to be curated materials and are not part of an intact component.

Materials recovered from the excavations at 23MC55 may represent an Early Archaic assemblage or a mixed Early/Middle Archaic assemblage. A deeply concave-based point similar to the type Graham Cave Notched point (Chapman 1975: 248-249) was recovered from the excavations. Chapman indicates that the type is more common in Early Archaic contexts. In addition, a number of Agate Basin Lanceolate (Chapman 1975: 241-242) points were recovered from the surface (Grantham 1977). Other points recovered included Godar Side-notched (Perino 1973: 85) as well as a variety of side-notched, concave-based forms. Until the datable radiocarbon samples have been run, it is still not possible to place the component in either an Early or Middle Archaic assemblage.

Middle Archaic

The reservoir area was certainly occupied by the Middle Archaic period. A large number of sites with Big Sandy Notched (Chapman 1975: 242) points occur within the reservoir. This might indicate that there was a heavy usage of the river valley during the Middle Archaic period. However, it has been postulated elsewhere (Chapman 1975: 242) that the form continues through the Late Archaic period and into the Early Woodland where the form occurs on Black Sand sites in Illinois (e.g. Fowler 1959b: 17). Likewise, such forms appear on Early Archaic sites as well as Middle Archaic sites in western Iowa and eastern Nebraska (Anderson 1974). The presence of Late Archic sites in the reservoir with other forms and without Big Sandy Notched points, would tend to indicate that the latter case is somewhat more likely. It appears at present that Big Sandy Notched points are characteristic of both Early and Middle Archaic occupations. Late Archaic sites containing Big Sandy Notched points have not been identified, although a number of Late Archaic sites which lack these forms have been recorded.

Ostensibly it would appear that there are two major assemblages of Middle Archaic material. The major

differences between the two occur largely in the projectile points. At 23MC55 projectile points are characterized by side-ntoched, straight-based points (Godar Side-notched, Perino 1973: 85), Agate Basin Lanceolate (Chapman 1975: 241-242), Graham Cave Notched (Chapman 1975: 248-249), and a variety of side-notched, straight-based forms. Again, there is no clear indication of whether this assemblage is Early Archaic or Middle Archaic. The other assemblage from 23MC56 is characterized by a variety of side-notched concave-based points with rounded and square stem-base junctures (Big Sandy Notched, Chapman 1975: 242) and lobate-stemmed forms (Category 2) and possibly square-stemmed points. Another form which may be Middle Archaic is a narrow corner-notched, broad straight-based form recovered from 23MC110 (Grantham 1977).

The remainder of the artifacts from assemblages are fairly uniform. They are characterized by large quantities of plant processing tools (including manos, metates, nutting stones, chert hammerstones, and other less numerous tools), but also include a wide variety of domestic implements (various scrapers, numerous drills and reamers, hammerstones, celts, axes, and a variety of biface forms).

Most of the sites are large, intensively occupied sites, but low density sites may be fairly numerous as well. There appears to be a slightly heavier reliance on local cherts than on sites from later periods.

Late Archaic

Late Archaic occupations within the reservoir are somewhat difficult to deal with. Comparable material for some of the artifacts was difficult to find. In addition, some of the problems relative to Big Sandy Complex materials (cf. Chapman 1975) are still problems for the Late Archaic. However, there would appear to be two assemblages which fall within the Late Archiac period. Again, the distinction between the two assemblages is largely on the basis of projectile points.

The first of these is present on sites 23MC142 and 23MC323. The projectile points are characterized by large expanding-stemmed points which are sometimes reworked until they are large triangular points, narrow expanding-stemmed points, incurvate-stemmed points, and large, broad corner-notched, straight-based points as well as square-stemmed points. The other assemblage comes from the plowzone and below plowzone contexts at 23MC56. Points are characterized by large numbers of square-stemmed points,

Etley-like bases (Chpaman 1975: 246), a basal fragment reminiscent of Motley points (Perino 1971b: 62-63), a variety of expanding-stemmed points, a long, narrow expanding-stemmed point, and an expanding-stemmed concave-based point with prominent shoulders. Another type of point recovered from 23MC56 and from surface collections (Grantham 1977) are basal-notched, convex-based points.

The other Late Archaic tools again are fairly consistent in both assemblages, although numbers of tools in relation to points is somewhat less in the assemblage from 23MC56. These tools include a large number of plant processing tools (manos, metates, nutting stones, chert hammerstones, and complex tools) as well as a number of domestic implements (drills, a variety of scrapers, hammerstones, axes, celts, and a variety of miscellaneous bifaces). Plant processing tools still outnumber both points and other domestic implements, but the number of plant processing tools compared to points appears to have declined slightly from Middle Archaic sites.

Likewise, there appears to have been a decline in the dependence on local cherts. Blanks and preforms have increased greatly as has the percentages of non-local to local cherts. Local cherts are, however, still utilized as evidenced by the number of cores and probably constitute about half of the types of chert utilized. The incidence of low density sites containing Late Archaic points appears to be fairly low.

Early/Middle Woodland

Woodland sites in the area are probably the least understood of all of the periods. Early and Middle Woodland have been lumped together here since it is not yet possible to define an Early Woodland period occupation in the reservoir area. Although Early Woodland ceramics have been recovered from the Long Branch area as well as from the Thomas Hill reservoir area (Shields 1966b: 98), there is still insufficient information to define an Early Woodland occupation. Sites 23MC65 and 23MC70 contained a number of Morton or Fettie Incised sherds (cf. Griffin 1952), but were totally lacking in Big Sandy Notched points (Grantham 1979). Likewise, Black Sand Incised sherds (Griffin 1952) were recovered from 23MC56. Big Sandy Notched points were completely lacking from plowzone contexts at the site, and ceramics were recovered from the plowzone only. As the latter is characteristically associated with Black Sand occupations in Illinois (Fowler 1959b: 17), some question of the validity of a Black Sand occupation could be raised.

While it appears that there is at least a minimal Early Woodland occupation in the area, there is as yet no way to separate it from earlier or later material.

Middle Woodland occupations are fairly numerous. Middle Woodland diagnostic material includes Snyders-like (Perino 1971b: 88-89), Manker Notched, Morton notched (White 1968), and other varieties of corner-notched points. Smoothed exterior pottery, often with punch and boss decoration, appears to be the most common pottery associated with these points. Although such pottery is common throughout much of the Woodland in Iowa (cf. Anderson 1975: 28), their occurrence as single decorative attributes on Middle Woodland ceramics to the east is less common (Fowler 1955) as well as to the south (Kay 1975). Hunt (1976: 405) notes that punch and boss decorations are common in Middle Woodland ceramics in the Salt River area, and their occurrence declines later in the Weaver ware sequence (Fowler 1955; Hunt 1976).

A single zoned, cord-wrapped stick-impressed sherd from 23MC65 and several dentate and zoned dentate and incised sherds from 23MC56 may be indicative of Hopewell-related occupations (cf. Griffin 1952), but at present, the lack of large numbers of Havana ceramics would tend to indicate that such occupations are rare. An examination of ceramics in private collections from the Chariton drainage system indicate that there are Havana-like ceramics within the drainage, particularly from the southern end of the drainage system. These do, however, often differ somewhat from more typical Havana ware (cf. Griffin 1952 and Kay 1975) in that the degree of complexity is often lower. Although most of the design elements are present (e.g. zoning, notching, cross-hatching, dentate stamping, and incising), ceramics often lack combinations in complex designs more typical of Havana wares to the east.

The near absence of such ceramics from the reservoir area would indicate that either groups making such ceramics did not often penetrate into the Long Branch area or that ceramics with such decorative motifs were not made or seldom made in that part of a seasonal round. The small number of more typical Snyders points (Perino 1971b: 88-89), the nubmers of plain, smooth sherds on sites with corner-notched varieties, and the general type of environmental specialization that the area exhibits would tend to indicate that both of these alternatives were active processes within the reservoir area.

Middle Woodland assemblages are treated as being relatively homogeneous in the reservoir area. Although

differences in assemblages can be noted, we are not able to divide them into different assemblages. Projectile points include contracting-stemmed, straight-based points, contracting-stemmed, rounded-based points, a variety of corner-notched and reworked corner-notched points, and broad corner-notched, convex-based points. Other tools in assemblages vary somewhat. In most cases, larger sites still contain a large number of plant processing tools (manos, nutting stones, hammerstones, and complex tools) and do not differ significantly from earlier Archaic sites in that these tools constitute the largest part of the artifact assemblages. Domestic implements are less common on the larger sites than the preceding periods, although sites with a large number of scrapers (e.g. 23MC298) and hammerstones (e.g. 23MC58) were noted in the survey (Grantham 1977). Drills are less common than preceding periods on all sites.

Dependence on local cherts appears to be only slightly less than on Late Archaic sites. There are, however, a greater number of blanks and preforms of both local and non-local materials than on earlier sites. Hunting is perhaps slightly more important than on earlier sites, but still is less important than plant processing. The incidence of low density sites characterized by projectile points, scraping tools, and chert working appears to have increased.

Late Woodland

Late Woodland sites are by far and away the most numerous and the most complex series of sites in the reservoir area. These sites have projectile points of a wide variety of forms including stemmed, side-notched, and corner-notched, ranging in size from medium to small. In addition, a variety of micro-points are believed to be part of Late Woodland assemblages.

Pottery forms also are highly variable. Cord-marked, straight- to slightly flaring-rimmed forms occur on sites often associated with a variety of small to medium forms. Corner-notched forms are the most common, although serrated and unserrrated side-notched points, stemmed, and basal-corner-notched forms also occur. Although all of these are somewhat larger than micropoints, few are as large as those of the preceding periods.

Micro-points such as Koster corner-notched (Perino 1973: 166) and small corner-notched forms appear to be associated with more complex pottery forms. These include cordmarked exteriors with interior punch and boss and

exterior lip notching with a cord-wrapped dowel, smoothed exteriors with interior and exterior punch and boss and punctates, smoothed exteriors with interior and exterior cord-wrapped dowel lip impressions, and cordmarked exteriors with interior punch and boss and cord-wrapped dowel impressions or notching on interior and exterior rims. All of the latter pottery forms are identical to Weaver ware from the Salt drainage (Hunt 1976) and from Illinois (Fowler 1955).

Other projectile point forms including small corner-notched, concave-based points, Scallorn points (Bell 1960: 84), a number of unclassified small points, and possibly contracting-stemmed points may be part of Late Woodland assemblages. There appear to be at least two assemblages represented in the reservoir area (an early Late Woodland and a late Late Woodland assemblage). The difficulty in separating these two and the probability that a larger number of assemblages are present has led us to treat them largely as a single assemblage until more detailed information over a broader area is present.

Artifacts in the assemblage(s) are distinctly different from earlier sites in the reservoir area. Most sites contain projectile points, a few drills from reworked points, flake scrapers, scrapers reworked from earlier projectile point forms, and from occasional to large quantities of pottery. Plant procesing tools on these sites are practically non-existent. Almost all sites are low density sites or they appear as small, thin components of larger multicomponent sites. The latter occurs more commonly. There is only a single site recorded to date (23MC369) which is larger and contains plant processing tools and appears to be fall seasonal sites. The number of plant processing tools is generally lower than on earlier sites, however.

Mississippian/Oneota

There are relatively few late sites in the reservoir area. These sites are characterized by a variety of point types, all being variants on the unnotched triangular micro-point. These types include Fresno, Huffaker, Reed, and Washita (Perino 1971b: 44-45, 58-59, 76-77, and 98-99 respectively).

Although the above types are often associated with good ceramic evidence indicative of Mississippian period occupations (cf. Perino 1971a), Hunt (1976) reports unnotched triangular points from Late Woodland sites in the

Salt River area. Indeed, Hunt (1976: 5) found a conflict between ceramic and projectile point ordering with triangular points being most numerous with the ceramics believed to be earliest in the ceramic seriation. Thus, this material might be considered to be Late Woodland as well. For that reason, we examined the distribution of sites containing notched and unnotched triangular micro-points. Of the twenty-one points recovered to date, only a single example (from 23MC134) occurs north of the juncture of the East Fork and the Long Branch - i.e. the lower two miles of the reservoir. Late Woodland sites are spread throughout the reservoir and Late Woodland materials occur on practically all sites.

This difference in distribution of materials alone would appear to be sufficient evidence to indicate that they are not Late Woodland. In addition, a majority of the unnotched triangular points come from sites or loci which contain no other apparent components. Thus, both settlement location and regional distribution differ from Late Woodland sites.

Assemblages differ from all preceding periods. Projectile points are the only tools recovered from sites. Although other materials such as chert waste and fire-cracked rock occur on some sites, others do not contain sufficient material to even include them in the class "site".

Historic

Aboriginal. No evidence of historic trade goods comes from any late sites and precludes the identification of any as historic aboriginal period occupation. Since projectile points are probably identical to late prehistoric ones, trade goods would be necessary to identify such sites. That historic tribes hunted in the area, however, appears apparent.

Euro-American. Although a number of historic sites were recorded in the survey (Grantham 1977) and recollected in the mitigration program, none of these have yet been dated. Likewise, a detailed analysis of these artifacts has not been attempted. We do not as yet have any detailed analysis of assemblages by time periods.

External Relationships

Although we have partially dealt with some of these relationships in the preceding section, a fuller discussion of these is necessary. The expressed purpose of this section is twofold. The first is to provide evidence for our expressed objective of determing the degree and kind of interaction and/or utilization of the river valley from the Salt and Chariton riverine systems. The second purpose is to illustrate the stability of adaptive potential in an adaptation to a mixed prairie environment.

Dalton

As we noted in the section on assemblages, Dalton-like points have been recovered from the surface and excavations at 23MC56 and 23MC65. Neither of these sites has any evidence of either a Dalton component or an Early Archaic component detectable in the excavated stratigraphy of the site. There is thus no indication of a Dalton occupation in the reservoir area from the material recovered to date. Dalton occupations may, however, occur to the west along the Chariton River.

Early Archaic

A number of forms belong to a possible Early Archaic occupation in the river valley. Dalton-like, Graham Cave Notched, Agate Basin Lanceolate, and possible Hardin-like forms have been recovered in the reservoir area. Dalton-like and the possible Hardin-like forms appear to be more characteristic of the Eastern Woodland. Dalton appears to be a transitional stage or period between fluted Paleo-Indian forms and Archaic forms (Chapman 1975: 126). At present, these forms appear to be concentrated along major river in the lower Missouri River and central Mississippi drainage eastward (Chapman 1975: 245, 249).

Other forms which appear to have Early Archaic contexts include basally thinned and unthinned concave-based, side-notched forms. These appear to be characteristic of central Prairie Peninsula sites from eastern Nebraska through central Iowa (Anderson 1974). In this area, transitionary forms from Plano forms are characterized by Agate Basin Lanceolate (Anderson 1974: 167-168). This type appears as late as 8500 + 200 B.P. in Horizon III of the Cherokee Sewer site (Shutler and Anderson 1974: 11), while side-notched, concave-based forms occur as early as 8430

+ 520 B.P. at the Simonsen site (Anderson 1974: 163). Thus, there appears to be a relatively direct developemnt from Agate Basin Lanceolate into side-notched, concave-based forms in western Iowa.

These side-notched, straight- and concave-based points have an extremely long time span. Zone D of the Logan Creek site was dated at 7250 ± 400 B.P. (Kivett 1962 and Frankforter 1959 in Anderson 1974). These would fall in the latter part of the Early Archaic. Dates on similar forms occur as late as 4720 ± 250 B.P. from the Turin site (in Anderson 1974). This similarity in form lead Anderson (1974: 167) to propose an interim term of "Prairie Archaic" to cover this period. Small concavo-convex forms such as those from Horizon II of the Cherokee Sewer site also occur in the reservoir area. Somewhat similar forms with the addition of fluted faces occurs on the Hardaway site (Wormington 1957: 73).

Mixtures of forms more typical of the Eastern Woodlands (such as Dalton Serrated, Hardin Barbed, Graham Cave Notched, and St. Charles Notched - Chapman 1975) with forms more typical of central prairie areas (e.g. side-notched forms) should be expected in the northern Missouri prairie areas. The material from 23MC55 would appear to agree well with this with both Graham Cave Notched and side-notched, concave-based forms along with Agate Basin Lanceolate present. The Dalton site (Chapman 1975: Figs. 6-6 through 6-13) also exhibits this phenomenon. Side-notched, concave-based forms quite similar to those from Iowa are associated with Dalton Serrated, Graham Cave Notched, Hardin Barbed, St. Charles Notched, and other stemmed and notched forms.

It would appear, at present, that influence from the south into the reservoir area is possible, based on the presence of Dalton-like points and possibly Hardin Barbed. There appears to be a stronger "prairie flavor" to the material in the area with side-notched forms being particularly abundant. As Middle Archaic sites also are characterized by similar material, it appears that Anderson's (1974: 166-167) interim term "Prairie Archaic" is an appropriate term for the existing data in the reservoir area. This may be the case for much of northern Missouri, and would perhaps partially explain the general lack of identified Early Archaic material noted by Chapman (1975: 156) for that area. Indeed, this phenomenon was noted by Chapman (1975: 182) who did not consider side-notched forms to be diagnostic.

Middle Archaic

There are certainly occupations in the river valley by the Middle Archaic. Excavations of 23MC56 revealed an extensive Middle Archaic occupation stratigraphically below more typical Late Archaic forms. Although material is present below the levels containing diagnostic Middle Archaic materials, it appears, based on the relatively diagnostic materials that there is possibly another Middle Archaic occupation. No evidence of an earlier component was recovered. Projectile point forms still belong predominantly to side-notched, concave-based forms. Basally thinned specimens still constitute a large percentage of these forms.

As we noted earlier, there may be two Middle Archaic assemblages in the area, although these may be an artifact of temporal differences rather than contemporaneous assemblages. Material from 23MC55 is characterized by side-notched, straight-based, non-basally thinned forms, Graham Cave Notched, side-notched, concave-based points, and Agate Basin Lanceolate points. The side-notched, straight-based forms appear to be identical to the type Godar side-notched (Perino 1973: 85) recovered from an Archaic charnal pit on the Pete Klunk site. Thus, it might be tempting to say that the relationships are closer to the east, but similar straight-based, side-notched forms occur in Horizon I of the Cherokee Sewer site (Anderson 1974) and the Hill site (Anderson 1974). It would appear that both side-notched, straight- and concave-based forms are more characteristic of the prairie area. Both Graham Cave Notched and Agate Basin Lanceolate are widespread throughout Missouri. Both are common in both prairie and woodland areas of the state, although the former appears to be somewhat more common in the eastern woodlands than in the prairie areas.

The other assemblage from 23MC56 is characterized by side-notched, concave-based forms. Some of these exhibit heavy basal thinning. These forms vary considerably in morphology from relatively long- to short-stemmed and with stem-base juncture varying from squared to elongate-pointed to lobate (sometimes on the same specimen). Lobate-stemmed to lobate-based, corner-notched points also occur. These may be indirectly related to Rice Lobed (Chapman 1975: 254) or possibly to Big Sandy Notched (Chapman 1975: 242). Although they exhibit the typical lobate basal morphologies of Rice Lobed, they lack basal thinning and the characteristic serrated, beveled blade margins. Although shoulders are often heavily reworked, some exhibit slightly oblique shoulders and almost appear corner-notched. These

forms occur only on sites which have side-notched forms as well.

Another form from the surface of 23MC110 (Grantham 1977) exhibits a broad straight base and narrow corner notches and may belong to the Middle Archaic period. It appears to be somewhat similar to material from Stratum 2 at Rodgers Shelter (Ahler 1971: Pl. 1, 1d). Lobate varieties and the corner-notched form may indicate relationships toward the south where similar forms occur (cf. Chapman 1975), but we do not have sufficient evidence at this time. Side-notched forms are typical on sites throughout the Prairie Peninsula during the Middle Archaic (e.g. Graham Cave - Logan 1952; western Iowa - Anderson 1974; central Iowa - Gradwohl and Osborn 1972; Minnesota - Shay 1971; and as far eastward as Indiana - Chapman 1975: 182).

At present, we do not have sufficient evidence to indicate whether these two assemblages are the result of utilization of influence on the area from other areas or whether they represent artifact change with time. Until the charcoal samples have been processed for radiocarbon assey, little light can be shed on this problem.

Late Archaic

Side-notched forms have been postulated as extending throughout the Late Archaic and into the Early Woodland in northeastern Missouri (Chapman 1975: 242). We see little evidence of this in the reservoir area. Late Archaic sites are characterized by an absence of these forms.

Again, there appear to be two distinctly different assemblages present in the river valley. The first, from 23MC56, includes point bases and proximal fragments in a variety of forms which appear to be like Etley Stemmed (Chapman 1975: 246), parallel-sided/expanding-stemmed base reminiscent of Motley points (Perino 1971b: 62-63), large, short square-stemmed points somewhat like Stone Square Stemmed (Chapman 1975: 257), various expanding-stemmed forms, and a point with expanding stem, concave-based and with prominent shoulders (barbs).

Etley points have their greatest concentration to the east in the Mississippian drainages of the Salt River (e.g. the Booth site - Klippel 1968) and into Illinois (Titterington 1950). They also occur as elements on Sedalia sites (Chapman 1975: Fig. 8-18; Fig. 8-25). Motley points also appear to be characteristic of the Mississippi valley (Perino 1971b: 62-63) where they appear to have Late Archaic

through Early Woodland contexts. Stone Square Stemmed appears throughout the Ozark highlands, lower Missouri River Valley, and northeastern Missouri (Chapman 1975: 257). Likewise, expanding-stemmed, concave-based points with prominent shoulders appear from levels 1B and 2B at Graham Cave (Klippel 1971: 27) and also possible related to some material from the Collins site (Klippel 1972: Fig. 9, 1:j).

The other assemblage appears on both 23MC142 and 23MC323. The assemblage is characterized by large expanding-stemmed points, narrow expanding-stemmed points, incurvate-stemmed points, square-stemmed points, and large broad corner-notched points, straight-based points. No directly comparable material for the assemblage could be found. Some of the material (especially the large expanding-stemmed points) appear to be similar to some material from Sedalia sites (e.g. Green Ridge - Turner 1965: Fig. 1 c; and the Pauling site - Chapman 1975: Fig. 8-19, f). It is possible that this assemblage is more closely related to sites to the north, but no similar assemblage could be found.

Early/Middle Woodland

Black Sand Incised sherds from 23MC56 and Morton or Fettie Incised sherds from 23MC65 and 23MC70 as well as from Thomas Hill reservoir (Shields 1966b: 98) may be indicative of intrusions from the east, but Black Sand even in Illinois is poorly understood as a unit. As we noted earlier, there are some questions as to the validity of an Early Woodland occupation in the reservoir area. These questions need to be resolved. It would appear that Black Sand and other Early Woodland sites as represented in western Illinois are underrepresented in the reservoir area. It would also appear that if there is an Early Woodland occupation in northern Missouri, it is a meager one. As that component has not yet adequately been defined on any site, it is proposed as a provivional designation. For purposes of expediency, Early and Middle Woodland have been lumped together until a better understanding of Early Woodland sites can be made.

Middle Woodland sites in the area are fairly numerous, but, unfortunately, these are poorly understood. With the exceptions of a zoned, cordwrapped-stick-impressed sherd from 23MC65 and dentate and zoned dentate stamped sherds from 23MC56, most of the ceramics from the area are characterized by sherds with smoothed exteriors. Punch and boss is the only decoration on other pottery. It would appear that Havana wares and decorative styles are largely

absent from the reservoir area. As more typical Havana-like ceramics appear in the Chariton River valley to the west, it is quite possible that such ceramics were not made in the part of the seasonal round which encompasses the reservoir area. On the other hand, somewhat similar ceramics with predominantly smoothed exteriors and punch and boss decoration appear to be typical ceramics for extreme northern Missouri and southern Iowa. Thus, it would appear that the degree of influence may be stronger to the north.

Broad corner-notched, convex-based points, Gary, and Langry points are more common forms of projectile points encountered on Middle Woodland sites. The first of these often appears to be heavily reworked until they resemble side-notched forms. That they were originally corner-notched is discernible in the flare on the remaining shoulders and the direction of the flakes removed from the notches. This phenomenon was recognized by Shields (1966a and b), but the failure to separate these forms lead him to propose that all of these were Late Woodland. While a number of these are associated with Late Woodland material in the Boone Focus (Denny 1964), many of the specimens from Thomas Hill are associated with ceramics more indicative of the Middle Woodland. Thus, Shields (1966b) proposed Late Woodland Randolph Complex appears to be a highly simplified model.

Although these broad corner-notched, convex-based points ostensibly somewhat resemble Synders points (Perino 1971b: 88-89), they are more generalized in form with less predominant blades than those encountered to the south (Kay 1975) and to the east (cf. Struever 1965; Blake 1942). Likewise, variability within this generalized category is greater than the type definition. Although it would not be difficult to subdivide this category, the degree of resharpening of blade edges makes such a process extremely tenuous.

Thus, although there appears to be some affinities to materials to the south and east, the major influence or utilization appears to have been from the north and/or west. The distinction of materials in the reservoir area from other assemblages to the east and south indicates external relationships similar to preceding Archaic adaptations. Thus, it is not surprising to see materials reflective of greater influence from the north. The extreme variablitiy in assemblages noted earlier may indicate that influences from other areas as well, but we are not yet able to isolate either individual assemblages or areas of influence.

Late Woodland

Late Woodland sites are the most numerous sites, but patterns differ significantly from earlier sites. One of the assemblages on Late Woodland sites includes pottery which belong to Weaver wares (see section on assemblages) as well as small corner-notched points and Koster corner-notched points (Perino 1973: 166). This assemblage appears to evidence utilization of the river valley by groups from the east. The materials do not appear to be the result of influence but represent actual seasonal movement into the area. These materials are identical to those from the Salt River drainage to the east (Hunt 1976; O'Brien and Warren 1979) and are closely related to materials in Illinois (Folwer 1955). Materials are far more similar to the ceramics from the east than to ceramics in the Boone Focus to the south (Denny 1964).

Other assemblages are more variable. They include a variety of small to medium corner-notched, side-notched, and stemmed points as well as cord-marked, straight- to flaring-rimmed ceramics. Scallorn points are not abundant but do occur in the river valley. Scallorn points are a major type in the Boone Focus material (Denny 1964: 142) as well as the predominant type throughout the Highland Aspect (Chapman 1948: 103; Chapman 1980; Geier 1975). Other point types may be related to Boone Focus sites, but at present there is little evidence of it. Ceramic assemblages from some of the sites (possible 23MC65) with an abundance of plain and cordmarked exteriors with plain, straight rims may be indicative of greater influence from the south.

Thus, there appears to be relationships to material to the east and possibly to the south. The extreme variability in point forms may indicate that even broader relationships are present (e.g. to the north and west), but the lack of comparable material from these areas precludes the identification of such relationships. It appears that Late Woodland forms are highly variable in other areas, and the diversity of forms in the reservoir area may not be indicative of broader relationships. Such a phenomenon, however, does not conform well with the prevailing paradigm, and an explanation of the diversity in projectile points on Late Woodland sites is necessary. Sites which lack the diversity of point types noted in the reservoir area are far more common in other areas (cf. Geier 1975).

Mississippian/Oneota

Although in the section on assemblages we attempted to demonstrate that notched and unnotched triangular

micro-points are not part of Late Woodland assemblages, we are left with a second problem. As the reservoir lies near the edge of the distributions of both Oneota and Mississippian, it is conceivable that either or both of these may be present within the reservoir. The main distinction between the two, and indeed the definition of both, has been largely on ceramics (decorative motifs). Unfortunately, this does not help us, as none of the pottery recovered to date is assignable to either. In fact, all single component sites from this time range recorded during the survey (Grantham 1977) are aceramic.

In an attempt to distinguish the two based on projectile points alone, a number of Mississippian and Oneota sites were selected and the ratios of notched and unnotched triangular points recovered from excavations were calculated (Grantham 1977). The results appeared to be fairly straight-forward. Oneota sites were characterized by unnotched triangular points almost to the exclusion of other forms. Mississippian sites examined appeared to be characterized by other forms particularly multiple-notched triangular forms. An examination of the sites from the reservoir revealed a single site (23MC65) which appeared to be characterized by multiple-notched forms with thirteen percent being unnotched and eighty-seven percent being notched and multiple-notched forms. The remainder of the sites contained only unnotched triangular forms. Thus, it would appear that the former site belongs to a Mississippian occupation and the latter sites are more likely part of an Oneota occupation. This must, however, remain tenuous until larger samples are available from late sites to the east and south of the reservoir area.

As Oneota occupations in central Missouri do not fully overlap with the full range of the Mississippian period to the east (cf. Henning 1970), it is possible that the Mississippian material from 23MC65 belongs early in the Mississippian period and that the Oneota material post-dates that material. Thus we have no indication of whether the observed material represents a culture contact situation or whether it is simply an artifact of culture sequence.

Historic

Aboriginal. Since we do not have any identified historic aboriginal sites in the reservoir, it is somewhat presumptuous to include information on historic tribes. However, as Oneota groups appear to be precursors of the historic Missouri tribe (Chapman 1946) as well as other historic groups to the north, this is not as presumptuous as

it initially appears. In addition, as historic groups illustrate distributional attributes and problems similar to earlier sites, such a discussion seems appropriate at this juncture.

Unfortunately, most of the tribes who used this area were early effected by both Euro-American contact and the westward push of displaced eastern tribes. The Missouri appear from the earliest accounts to have been located near the confluence of the Grand River with the Missouri River (Chapman 1946; Berry and Chapman 1942). Oneota sites in the Big Bend area occur in Howard and Saline Counties, Missouri (cf. Chapman 1946; Henning 1970; and Krause, Kay, and Leaf 1972). Miro (in Nasatir 1930) reported that their hunting grounds in 1785 was the territory from the River of the Mine (Lamine), extending to the Meadow of Fire eight leagues below the River of Cances (Kansas), on both banks of the Missouri River. This distribution and the presence of Oneota sites as far east as Howard County would tend to indicate that control was exercised over both the Grand and Chariton drainage systems. Chouteau (in Anonymous 1974: 15) described the territory of the Missouri as bounded on the north by the ridge dividing the waters of the Mississippi and the Missouri; on the west and northwest by the country of the Kansas (that is, by his own definition, a line drawn northward from the mouth of the Kansas River to the headwaters of the Nishnabotna River in Iowa); on the south by the Missouri River; and on the east by the country of the Little Osages, whose western boundary Chouteau designates as the Grand River and its most eastern tributary. That the Little Osages were latecomers to the Big Bend area (from which they probably hunted northward) seems apparent. Chapman (1959: 6) estimated that the Little Osage village (23SA3) was occupied from about 1727 to perhaps 1777. Thus, it would appear that the Missouri probably controlled both the Grand and the Chariton drainage systems in protohistoric and early historic times.

The dividing line between the Missouri and Illinois tribes appears to have been near the ridge east of the reservoir, which divides the waters of the Mississippi and the Missouri Rivers. That the Illinois controlled the Mississippian drainages in Missouri seems apparent. Beckwith (1884: 102) describes the territory of the Illinois as bounded on the east by the ridge that divides the waters of the Illinois and Wabash Rivers, between the headwaters of Saline Creek and a point as far north on the Illinois as the Desplaines, reaching still further northward to the detectable ground between themselves, the Winnebagoes, the Sacs and the Foxes, and the Kickapoos; and extending westward of the Mississippi. Elsewhere, he (Beckwith 1884:

101) describes the country of the Illinois as a wide region of country, lying north of the mouth of the Ohio and upon both sides of the Mississippi. Collot (1826) in his journey of 1796 also described the country north and west of St. Louis as the "Country of the Illinois".

Thus, it would appear that the reservoir area lies at the extreme of both the range of the Missouri and the Illinois. By 1800, both of these groups had been decimated by disease and by attacks from other groups of Indians. Most of the Missouri moved westward to join the Oto (Henning 1970), while the Illinois ceded their lands and were later removed to Kansas. Groups later than these (principally the Iowa but the Sac and Fox as well) moved into the area, and it was these groups which were encountered by early Euro-American settlers.

Summary and Conclusions

The river valley may have been occupied as early as the Early Archaic period. Unfortunately we do not have sufficiently detailed information at the present time to confirm this. Until radiocarbon assey has been run on the collected charcoal samples, chronological control is not yet tight. The presence of Graham Cave Notched points with side-notched, concave-based points and Agate Basin Lanceolate points from 23MC55 is, however, highly suggestive. The valley does contain evidences of occupation from the Middle Archaic period. Sites containing various assemblages from subsequent periods document a long temporal range of use. The fact that all time periods at least from the Middle Archaic onward are present in the reservoir is evidence for almost continuous occupation from that time until the present. Thus, at least 7000 years of historic and prehistoric occupations are represented within the reservoir area.

The presence of a number of assemblages within the same chronologicsl units appear to evidence influence and/or utilization of the river valley from multiple directions. External relationships to the east, south, and north appear within a number of assemblages. The degree of influence from these various areas appears to fluctuate considerably in different chronological periods, however. Thus, not only do we witness the degree of influence and/or utilization which we expected by the reservoir's placement near the Mississippian system of the Salt River, but there also appears to be an even greater degree of external relationships to the north and south. These relationships

as we presently understand them are depicted in Figure 210. Not only are the external relationships themselves worthy of more detailed study, but the fluctuations in the directionality of these influences by time periods make the area particularly important for the study of culture contact situations.

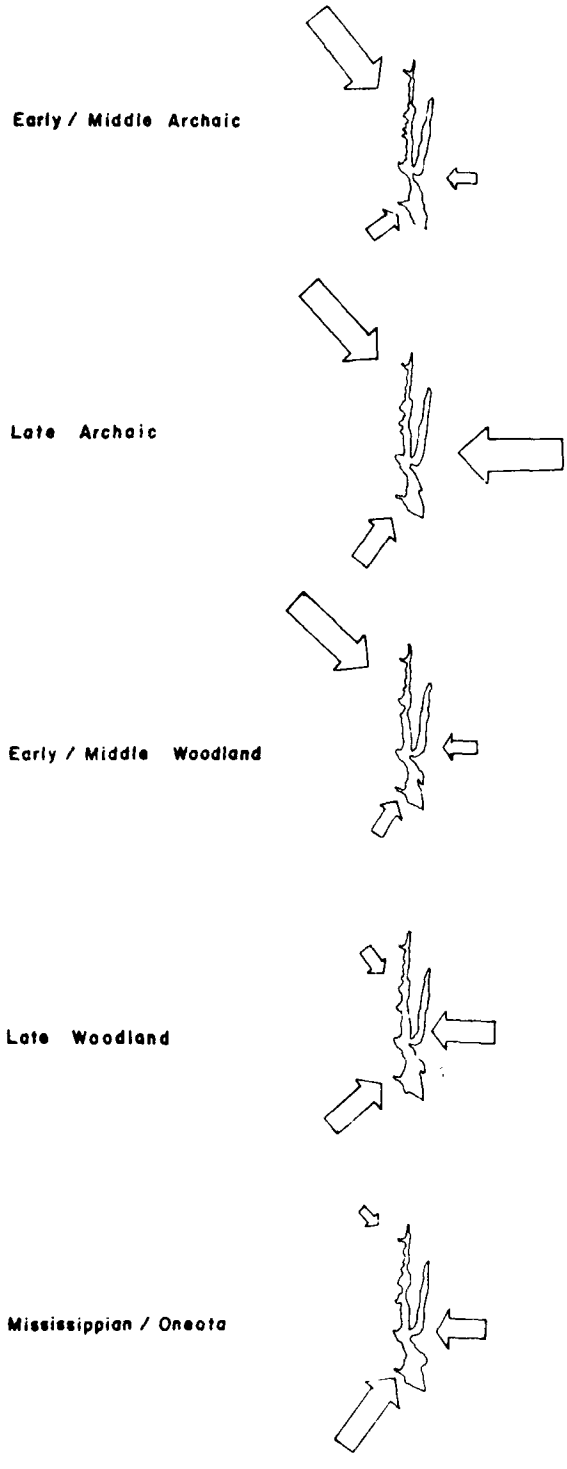

Figure 210. External Relationships of Sites, Long Branch Area.

SUBSISTENCE-SETTLEMENT SYSTEMS

Before attempting to interpret either settlement or subsistence patterns, we must be able to establish the certainty of contemporaneity (Winters 1969: 108). Unfortunately, this is seldom possible as the most time-sensitive artifacts for chronological order (i.e. largely projectile points and ceramics) do not allow for fine temporal control. This allows a considerable range for noncontemporaneity. Processes such as culture change, changes in subsistence-settlement patterns, and functional nonequivalence of sites, if operating processes, create divergence within chronological periods and create the need for tigther chronological control.

As we shall see, however, these chronological periods exhibit startlingly similar within-unit usage of natural resources by populations. Both basic modes of production and social organizations are quite similar within chronological periods. Although sites within and between periods exhibit considerable variability by functions, the same types of sites continue to appear throughout the chronological periods and even throughout traditions or stages. It is thus estimated that these long temporal units can be used in a discussion of subsistence -settlement systems. These can, in essence, be treated as functionally similar within units as well as chronological contemporaries. As we noted in the preceding sections, processes of cultural change between chronological units as well as influence and/or utilization of the valley from multiple areas has occurred throughout the history of occupation. Functional equivalence of systems within chronological periods and constant subsistence-settlement patterns, however, characterize those periods.

The Settlement Pattern

Settlement pattern will here refer to the geographic and physiographic relationships of a contemporary group of sites. Contemporary here will be used to refer to chronological periods as defined in the preceding sections. A preliminary outline for the justification of such a usage appears in the introduction of this section.

Settlement patterns may only be defined over an area which encompasses a full seasonal round of a particular group. That the reservoir does not encompass such an area is apparent not only from its size but, as we shall see, by

the types of sites present in the valley. Although this places a limit on the statements which can be made on full settlement patterns, we have attempted to examine the settlement pattern relationships within this segment of the seasonal round and have actempted as well to make some statements on the fuller pattern as viewed from the reservoir area.

Sites in the reservoir area are easily divisible into high density and low density sites. Quantification of this division is presently being prepared. High density sites are situated in two major physiographic settings. The majority of these lie on the large hills which extend into the floodplain, usually at the southern terminus of old meander loops. Almost all of the rest are near the entrance of large intermittent streams into the floodplain. A single, large, high density site has been located in the floodplain. It is possible that additional high density sites are buried, and have not yet been recorded. Sites with lower material density are often located on low hills near the river. That there are functional differences in these will become apparent in the following section. A number of these are, however, on low hills near areas of bottomland prairie. Low density sites are also found on high ridges well back from the river, and at the edge of large upland prairie areas. These sites also are radically different from other sites in the types of materials present. The last low density site physiographic setting is on small rises in the floodplain. These occur on erosional remnants and on over-bank deposits of natural river levees. These sites are extremely similar to upland high density sites in the types of tools present.

Attempting to define types of settlement patterns from the data present in the reservoir area is extremely difficult. Types are based not only on the sites present in the reservoir area, but on intuitive impressions of site collections from other areas in the drainage. Thus, these must be considered as highly tenuous until a considerably greater amount of work in the drainage is completed.

Winters (1969: 110-111) defined three types of settlement patterns. The first of these was an extended and dispersed type which apparently characterized the Early Archaic. Winters described the pattern as widely dispersed, small, functionally undifferentiated sites with no clearly definable cultural boundaries often within areas covering thousands of square miles. The second he labeled an involuted type characteristic of the Late Archaic Riverton culture. This was described as major middens with ancillary dependencies constituting a single matrix within the

settlement pattern itself. The third type he called an extended nexus type characteristic of Mississippian groups. This he described as a complex network of interrelated towns, hamlets, farmsteads, and camps usually covering several hundred square miles.

Unfortunately, none of these appear to be appropriate as a model for the Chariton River drainage. Most of this difference probably results from the differences in the types of riverine systems. While the Wabash is a broad valley with numerous large secondaries, the Chariton is long, narrow, and lacks a large number of major secondary drainages. This fact appears to have had a major imprint on the types of settlement patterns.

While at present we do not have any evidence of an extended and dispersed type, it is quite possible that such a system could have been operative. Although it is possible that Early Archaic occupations are present within the river valley, there is presently no evidence to confirm the existence of such a pattern. Earlier occupations have not been identified. While it would appear that Paleo-Indian sites may exhibit such a pattern in central Missouri (Chapman 1975), Early Archaic sites in central Missouri appear to lack an extended and dispersed distribution. Middle Archaic and/or Early Archaic sites have a broader range of activities than later sites, but all have a structured pattern with functionally differentiated sites present.

From perhaps the Early Archaic and certainly the Middle Archaic through the Middle Woodland period, sites fall into a structured series along and across drainages. Thus, there does not appear to be an involuted type. By the linear patterning of the sites, it would appear that resources are structured along the river. Although the pattern of sites is somewhat similar to Winters' extended and dispersed pattern in the linearity of the pattern, sites are significantly different from each other. Thus, it would appear that the pattern would best be referred to as an extended-structured type.

During the Late Woodland period, there is an apparent shift from earlier sites. Although somewhat more closely resembling Winters' involuted type, they appear to lack the involuted pattern. Centralized sites with linear dispersed ancillaries appears to be the predominant pattern to the west and south. Thus, although exhibiting larger centralized and structured sites, there are still smaller extended, more dispersed, functionally similar sites along the upper ends of drainages. The patterning of these sites

appears to be fairly highly dispersed, and sites are present almost everywhere within the valley. Thus, the type of pattern appears to be best referred to as a somewhat centralized/extended-dispersed pattern.

Late prehistoric and protohistoric sites are characterized by very small, functionally similar sites. The pattern of these sites is highly dispersed, and material is widely scattered although largely confined to the area below the juncture of the Long Branch and the East Fork. Sites away from the reservoir area appear to be highly centralized with semi-permanent to permanent villages and a few small structured sites. Other sites away from this core area appear largely to be extended and dispersed. Thus, the pattern appears to be best defined as a core centralized-structured/extended-dispersed pattern. This pattern somewhat resembles Winters' nexus pattern but lacks the complexity and interrelated network pattern.

Although we have no information on patterns of historic aboriginal populations, it would appear that they are identical to protohistoric distributions. Historic Euro-American sites in the early history of occupation exhibit the "edge-of-the-woods" pattern noted by Hewes (1950:45-46). Later settlements occupied first the wooded areas, and, with the coming of the steel moldboard plow, later ocupied the prairie areas. As the settlement pattern closely resembles that discussed by Hewes (1950) with the exception of the wet upland prairie, no further statement of settlement patterns of early Euro-Americans is deemed necessary. The reader is referred to Hewes (1950) for a fuller discussion.

Subsistence Pattern

Subsistence pattern will here be used to refer to the functional relationships among a contemporary group of sites. Contemporary again referring to the chronological units defined in earlier sections. Although subsistence patterns should be based on primary by-products of subsistence activities (i.e. floral and faunal remains), there has not yet been a system devised whereby the two can be treated on an equal basis for deriving percentages of dietary products. Recourse is often made to secondaries (i.e. tools linked with food processing) rather than the primaries when discussing subsistence activities. We are somewhat forced into this course, as our data includes only floral material with one exception (23MC369). There is a general lack of bone preservation on sites in the reservoir

area due to the high acidity of the soil. Only in rare instances where the acidity is neutralized (e.g. in features with limestone or in alluvial soils) is bone preserved. Likewise, although a large amount of floral material was recovered in the excavations, few samples have adequately been processed. In general, after flotation and screening, types of floral materials were noted, but none of the samples have been completely processed. This does not necessarily limit what we can say about subsistence activities, however, as both plant and animal foods are intimately linked to tools (sedondaries) through processes involved between primary procurement and final discard of by-products. Statements on functionality refer to the section on functional implications.

Technological differences

Low density sites. Density classes are presently being quantified. All of the low density sites are lumped together under a category of limited activity areas as almost all of these are characterized by a very small set of functional relationships. There are, however, differences in the types of tools indicative of multiple sets within the general class. We have attempted to divide these into groups on the basis of size, physiographic setting, and inferred functions. We will discuss each of these in turn, and the first of these will be technological differences.

1. The first of these we shall refer to as small upland hunting camps. These sites are characterized by fire-cracked rock and small amounts of chert waste. Occasionally projectile points and scrapers are recovered as well (cf. Reeder 1980). Some of the sites recorded during the survey (Grantham 1977) entirely lacked chert waste, and all of the sites recorded in the survey lacked any tools diagnostic of other functions. Thus, we have no idea of their relative age, nor can we be certain of the functions carried out on these sites. However, the presence of fire-cracked rock would tend to indicate that fire-related activities (perhaps processing of animal products) were conducted on the sites. Likewise, the presence of chert waste on some of the sites would indicate that a small amount of fabricating (i.e. chert reduction or tool maintenance) was also conducted. Although it is doubful that these represent the only activities, they are the only ones apparent to date.

2. The second of these we will refer to as small undifferentiated hunting camps. These are probably the most environmentally diversified type within the class. These

sites are characterized by fire-cracked rock, chert waste, projectile points, scrapers, and a small number of chert reduction tools. These sites are located in a variety of physiographic settings and may represent multiple types. Most of these sites do not contain sufficient surface material in order to identify their relative age nor to place them with assurance in this group. Activities on these sites appear to be characterized by the processing of animal products, use as a hunting base, and lithic reduction. Other activities may be present on these sites, but their relative densities make idertification difficult. Some of these sites ring areas of bottomland prairie, and, while it is possible to delimit them as a different type, they do not differ significantly from the other sites in this group. Thus, the difference in geographic distribution does not appear to be sufficient to create a separate group. It does appear that fire-cracked rock is often less common than on upland hunting camps.

3. The third group of low density sites will be referred to as small transient camps. The term is somewhat arbitrarily applied as "transient" is simply inferred from the representation of activities. We have not been able to place them in any other relative functional set. These sites are characterized by the presence of domestic implements (largely plant processing tools), hunting implements, chert working tools, fire-cracked rock, and chert waste. The presence of plant processing tools indicates that a broader subsistence base than the preceding sites is present. Hunting is still, however, far more important than plant processing on these sites. It may be that these represent multiple, noncontemporaneous occupations. Other activities include lithic reduction and processing of animal products as well as a limited amount of fabricating and processing. They are, however, characterized by the absence of multiple other activities present on larger sites. It would appear that these are transient camps representing small groups of people and short periods of occupation on the sites.

4. The fourth group of low density sites we will refer to as small seasonal sites. Sites are characterized by the presence of domestic implements (largely plant processing tools) as well as hunting implements, chert working tools, few fabricating and processing tools, fire-cracked rock and chert waste. Most of these sites appear to be smaller versions of large upland seasonal sites. Plant processing is often equal to, if not more important than, hunting in subsistence activities. The main difference between these sites and those of the preceding group is the relative importance of plant processing. Activities include plant

and animal processing, some fabricating and processing, chert working, and hunting. The multiplicity of other activities on larger sites are present but not to the degree of larger seasonal sites.

High density sites. There appears to be largely a single type of high density site. Although differences may be seen in the range of activities by time periods, all are largely consistent in the relative proportions of subsistence activities. Thus, no distinction has been made between them.

5. This group of sites will be simply referred to as large seasonal sites. Assemblages are characterized by an abundance of domestic implements (especially plant processing tools). Ratios of plant processing tools to hunting implements varies somewhat between chronological units but may reach ratios as high as 18:1. These tools indicate that plant processing is, without exception, by far and away the most important activity on sites. Other tools include a variety of fabricating and processing tools - chert working, tool manufacture, scraping, drilling, and wood working. Activities, thus, indicate plant processing, hunting, animal and hide processing, and a variety of fabricating and processing activities.

Geographic distinctions and relationships to resources

In this section, we intend to give the broadest representation of the relationships of these site types to physiographic setting and to resources. These should be understood as broad relationships, as exceptions to the stipulated relationships occur in all of these. Although noted in some cases, exceptions have largely been deleted.

Low density sites. Again, we hage attempted to divide these sites into groups on the basis of size, physiographic setting and relationships to resources, and inferred function. As physiographic settings and their implied relationships to resources are one of the primary distinctions, these relationships are discussed separately.

1. Small upland hunting camps are relatively few in number. This would appear to be an artifact of the relatively low material density. All of these sites that were located on the survey (Grantham 1977) were located in two-tracks, cattle paths, or on highly eroded ground. All of these appear to be restricted to extreme upland

situations on or near the ridges formed by the juncture of lower hill slopes into broad, wide ridges. These ridges are larger erosional units and are generally bounded by larger intermittent streams. These ridges are long and flat and represent extensions of the upland plain into which secondaries are eroded. These sites are on or near the transition from oak-hickory forest into barrens or upland prairie. Although they appear on both sides of the river valley, they are more common on the western side of the valley. The sample size is, however, relatively small. Technological resources vary with proximity to the river, but most are considerably nearer larger intermittent streams. The fire-cracked rock on sites is characteristic of primary use of those intermittent streams for lithic resources. A single site recorded on the survey (Grantham 1977) which was near a sand and gravel lens exposure which appears to have been the primary source of lithic raw material.

2. Small undifferentiated hunting camps are particularly widespread. They appear, however, to be most common on mid and lower slope ranges with the latter more common. Although widespread, they appear to be largely confined to the oak-hickory forest. Although they appear more commonly on the western side of the valley, they do occur on both sides. Their more common occurrence on the western side may be related to the proximity of the upland prairie to the river vallye on that side of the river. Thus, they may be positioned to more easily exploit a larger area of prairie as well as the floodplain. This apparent distributional trend may, however, simply be an artifact of the more common occurrence of other types of sites on the eastern side of the river valley. Other types of sites on that side may simply mask the occurrence of such sites. As we noted in the previous section, a number of these surround bottomland prairie areas. Although potentially separable on the basis of physiography, their artifact inventories do not appear to be sufficiently distinct to make such a separation. Their relationship to technological resources does not present any apparent pattern at this time. A large number are near the floodplain and appear to be exploiting the river for technological resources, while others are more closely oriented toward utilization of intermittent streams. Mid slope sites appear to have largely utilized intermittent streams for sources of primary raw lithic material.

3. Small transient camps are also somewhat widespread physiographically. They occur largely in the bottomland on low rises (erosional remnants and on natural river levees) as well as along lower slopes on the eastern side of the river valley. Occurrences of these sites on lower slopes

are generally at or near slowly sloping hills' junctures with the floodplain. They seldom occur on the western side of the river valley even if similar physiographic settings are present on that side of the valley. Thus, settings are largely determined by resources (both plant and lithic) rather than physiographic setting alone. All sites are locted within mixed alluvial hardwoods or at or near the juncture of the latter with the oak-hickory forest. Such sites are often located near the juncture of an intermittent stream with the floodplain or with the river. Although samples are often small, intermittent streams most often serve as sources of lithic materials. Sites which are not in close proximity to intermittent streams obtain lithic materials from the river.

4. Small seasonal sites occur largely in the floodplain. They occur on low rises, most often on natural river levees. Although they most often occur on the exteriors of meander loops, tney also appear on the interiors. Occasionally such sites lie near the entrance of intermittent streams into the river or on the floodplains of large intermittent streams. It is difficult to tell if there are any of these sites in the uplands, but none have yet been identified. Technological resources were largely oriented toward usage of the river as most of these occur in those settings. However, sites with the same distance or less to intermittent streams will utilize the latter.

High density sites. Although these sites appear to be relatively uniform in the types of activities present, there is a wide variety of physiographic settings in which the sites occur.

5. Large seasonal sites appear in upland settings. Most are located on high hills above the level of the floodplain, often in excess of thirty feet. Most intensively occupied sites appear on hills projecting into the floodplain at the southern eands of meander loops. This is particularly true of earlier sites. Such sites also appear on high hills at the entrance of large intermittent streams into the floodplain. There are only two sites (23MC323 and 23MC349) recorded to date which are located in the floodplain. The fact that 23MC323 lies on a large erosional remnant and the other sites lie in upland situations may indicate that flooding posed a serious problem. Most of these sites lie on the eastern edge of the river valley. This appears, however, to be an artifact of the morphology of the river valley. Wherever slopes are steep and do not rise slowly from the floodplain, such sites occur regardless of the side of the river valley. Sites are

often located at the juncture of mixed alluvial hardwoods with oak-hickory forest. Sites are also located higher in mid slope ranges well within oak-hickory forest. As most sites occur in lower slope ranges, lithic materials are most often obtained from the river. Sites in mid-slope ranges tend to make use of intermittent streams.

Thus, it would appear that most physiographic settings and environmental areas (with the exceptions of oak barrens and upland prairie) contain sites. The positions of small upland hunting camps would, however, argue that these environmental settings were utilized. Figure 211 summarizes the information presented in this section.

Seasonal evidences

For small upland hunting camps and small undifferentiated hunting camps, there is no evidence for seasonality at all. Although functions such as hunting and chert working as well as some fabricating and processing are present on these sites, none of these contain evidences which are amenable to seasonal interpretation. Most of these are ubiquitous activities and are present on all sites throughout a seasonal round.

Small transient camps, small seasonal sites, and large seasonal sites are all characterized by the presence of plant processing tools. Their numbers and relative percentages, however, vary between these types. Nutting stones are particularly common, and carbonized nut shells often make up the bulk of floral remains, aside from wood charcoal. Winters (1969: 117) has noted that caution should be used when using plant materials (especially nuts) for evidence of seasonal occupations. Ethnographically, these, along with a number of other plant foods (cf. Yarnell 1964: 75-76), were stored for use during the winter. Although ostensibly this poses problems, the implication that storage mechanisms are present is inherent. Archaic sites are notable in the lack of any recognizable storage mechanism (e.g. pottery or storage pits). Although Early/Middle Woodland sites contain both pottery and pits, the small amount of pottery and the specialized nature of the pits on the sites (i.e., cooking and not storage) would appear to be negative statements on the presence of storage mechanisms. It would ostensibly appear that the presence of nuts and tools related to their processing are the direct result of immediate consumption and do not reflect storage of such items. Although we cannot rule out the possibility of perishable containers, other lines of evidence would appear to rule out a longer period of utilization (i.e., into the

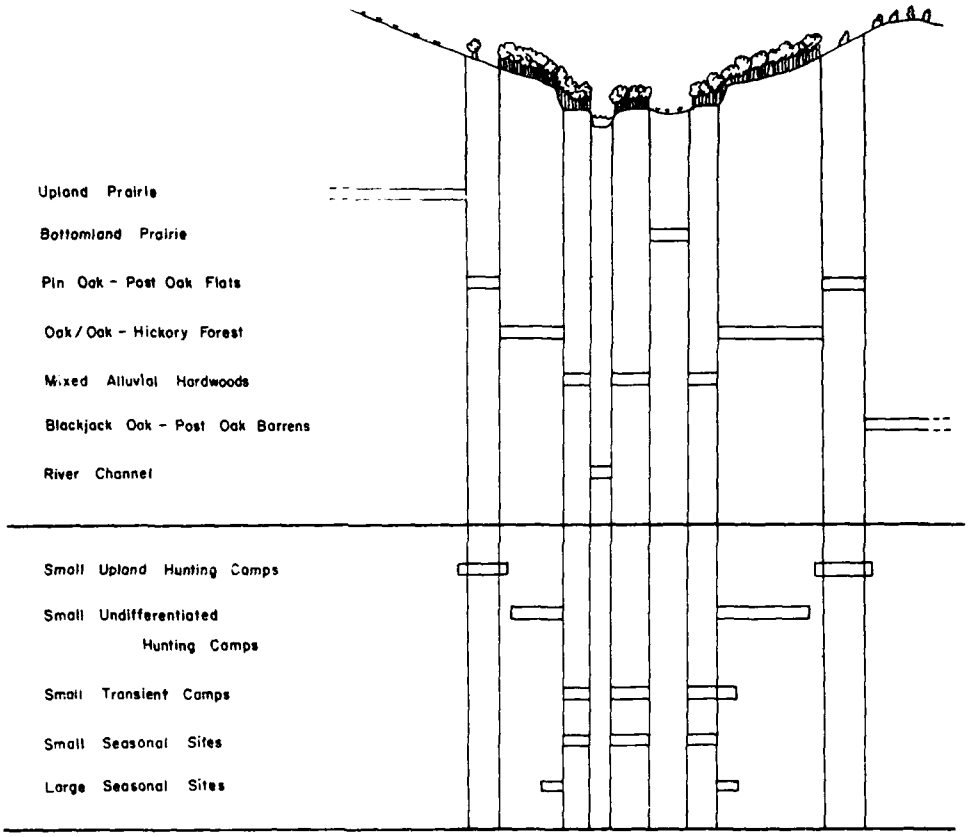

Figure 211. Physiographic and Environmental Model of Sites by Inferred Function.

winter). Cobble manos and metates probably represent utilization of seeds as well, but floral remains have not yet been carefully examined.

Additional data appears in the physiographic settings of sites. Floodplain settings appear to have been avoided in regard to large seasonal sites. The only occurrence of a large erosional remnant in the floodplain contains a large seasonal site. The placement of sites in the uplands are largely as near the floodplain as possible and projections into the floodplain are the most densely occupied. All are placed on high hills. Low hills which slope slowly uphill from the floodplain were avoided. Although late spring and early summer often experience the worst floods, the absence of summer drought periods often result in flooding on rivers in the late summer and early fall. Thus, by reference to our vegetational change model, extended drought periods will result in not only the possibility of occupations in the river valley, but also a decline in the amounts of nuts produced by trees. In drought periods of some duration, not only will nut production be lowered, but some death of nut producing trees will occur. Thus, occupations in the floodplain should be reflective of these changes. Indeed, it is estimated that small seasonal sites are reflective of reduced production during drought periods. Although sites closely resemble larger upland sites, the intensity and duration of occupation appears to be drastically lowered. Small transient camps thus probably represent fall occupations when extended droughts have occurred, nut production is very low, and hunting constitutes the largest part of subsistence. Intensity and duration of occupation is very low. As all three of these types of sites contain evidence of late summer or fall occupations, it is estimated that environmental factors are controlling mechanisms for site size (and indirectly group composition), placement, and intensity of occupation and its duration.

Lastly, there is an apparent lack of postmolds from excavations and evidence of substantial structures is meager. Structural remains were encountered only at 23MC56 and 23MC70. Although not necessarily indicative of non-winter occupations, group sizes on large seasonal sites would tend to be rather large for winter occupations in the prairie without greater evidence of substantial structures.

Although we have no strong evidence for support, it presently appears that late summer and/or fall occupations characterize small transient camps, small seasonal sites, and large seasonal sites. It would also appear that these may extend into the winter but in general it appears that further division of units (to nuclear or extended families)

occur prior to winter occupations. It is estimated that all three of the above site types represent late summer and/or fall occupations, and that the distinctions between the three is largely a result of environmental fluctuations.

Intensity of occupation and population size

Small upland hunting camps and small undifferentiated hunting camps both are characterized by the absence of female-related tools. Although sites near bottomland prairies are often larger and contain scrapers and other fabricating and processing tools, it would appear that units larger than the above are involved, and that both males and females are present in the group. It is suggested that at least a nuclear family is represented, but probably does not exceed an extended family. The size of the sites (generally less than one acre) would tend to indicate that the latter would be maximal. The intensity of occupation appears to be fairly low. All appear to be temporary and duration of occupation relatively short but longer than that for hunting camps. It appears that both of these are exploiting similar resources during the same season, and that the resulting differences in types are largely an artifact of environmental restraints.

Large seasonal sites are characterized by both male- and female-related tools (i.e. domestic implements and *fabricating and processing* tools as well as hunting implements). It would appear that units larger than extended families are represented by these sites. Sizes range from approximately two acres to as high as eight acres. It seems probably that population sizes are fairly large with group sizes as large as bands but not approaching the sizes expected for a local base camp. The intensity of occupation appears to be heavy, and the duration of occupation longer than the above sites.

Summary and Conclusions

It would appear that the river valley exhibits an extreme environmentally specialized area. Hunting camps appear to be the result of small groups of males hunting in the area, with sites largely near prairie areas, although sites occur throughout physiographic and environmental areas. The season for such sites could not, however, be determined. They were occupied by small groups and site occupations were extremely short in duration.

Small transient camps, small seasonal sites, and large seasonal sites all appear to have been occupied in late summer and/or fall. The size and social organization of the sites vary. The causes of this variation appear to be largely environmental fluctuations. Group sizes range from familial units to larger groups (bands?). Most of these sites appear to be positioned to exploit both upland and bottomland resources. Duration of occupations range from relatively short in the case of small transient camps to several months in the case of large seasonal sites. The number of other activities on sites varies but in all cases plant processing is at least present. In the case of both small and large seasonal sites, plant processing appears to be the major activity. The longer the duration of occupation, the larger the number of other activities.

Subsistence-Settlement Systems

From the functional relationships outlined in the preceding section, it is obvious that we are not looking at a full subsistence-settlement sytem. In all periods of occupation, we are looking at a very small segment of a broader-reaching system. We shall attempt to examine each of the chronological units and their manifestations of segments of subsistence-settlement systems within the river valley.

Early/Middle Archaic

Sites are characterized by a number of major occupations in the river valley on large seasonal sites. Although other components are present in the river valley, these are somewhat more difficult to analyze. Several of these, however, appear to represent small seasonal sites and small transient camps. Further work on these is necessary before a fuller understanding can be made, however. It would appear that fall exploitation in the river valley predominated, but the intensity of occupation varies. We have not yet been able to isolate components on sites which represent hunting camps, and a determination of their presence must await further work.

The climate of these chronological units is characterized by an expansion of Pacific air into the air. By reference to circulation patterns described under the section on physical environment, failure of the contraction of this wedge of dry air in the summer would be more likely to occur. This would severely decrease summer precipitation

and result in increased periods of droughts and higher temperatures. If, indeed, small seasonal sites and small transient camps are the result of environmental factors, then their number should be greater during this period than periods in which this wedge of Pacific air is less likely to dominate summer circulation. Fluctuations in climatic episodes do occur within the chronological unit, however (Bryson et al. 1970: 63).

Late Archaic

Sites are characterized by a number of major occupations of large seasonal sites. Their number, however, appears to be less than the preceding period. A major attribute of the settlement pattern is a relatively small number of small seasonal sites and small transient camps. Again, these components are somewhat difficult to analyze, and further work is necessary before a fuller understanding of their nature is possible. It appears that fall exploitation of the river valley predominates. Occupations are fairly intense with considerably less variation than earlier sites. Again, we have not been able to isolate components which appear to represent hunting camps, and further work on these is necessary before such a determination can be made.

The climate of the period is characterized by a reduction of the penetration of Pacific air into the area, and grasslands appear to have contracted. Again by reference to circulation patterns, this would probably have resulted in the contraction of the wedge of Pacific air well into the Plains during the summer time. This would ostensibly have resulted in increased summer precipitation, and periods of drought (particularly extended droughts) would be less likely to occur. Thus, the relative intensity of occupations and the small number of small seasonal sites and small transient camps is not surprising.

Early/Middle Woodland

Sites are characterized by a large number of major occupations. The major attribute is, however, a very large number of small seasonal sites, small transient camps, and a number of hunting camps varying widely in physiographic settings. Small seasonal sites and small transient camps near or in the floodplain are common. It would appear that fall expolitation in the river valley still predominates, but the number, type, and variety of other activities on sites varies considerably. Occupations of large seasonal

sites appears to be less intense, and the number of small sites is considerably greater.

The climate of this chronological period is characterized by a southward displacement of circulation patterns. While having a cooler and wetter effect on much of the eastern woodlands, this would have placed the reservoir area nearer the heart of the Prairie Peninsula. It is difficult to estimate the effects which this would have had on the vegetation of the area, but it may have resulted in an expansion of prairie areas. This may be largely responsible for a continuation of the adaptation of the preceding periods, rather than elaborating social and material traditions as well as changing subsistence-settlement systems noted in other areas. Likewise, this may account for the diversity of sites noted. Until further excavations are conducted, however, we cannot rule out other processes such as cultural change.

Graphic representation of this singular adaptation from Early/Middle Archaic through Middle Woodland is provided in Figure 212.

Late Woodland

During the Late Woodland period, there is a major shift in subsistence-settlement systems in the river valley. Although sites of this period are extremely numerous and complex, we are not able to see much deviation from a single type. Although classed as small seasonal istes on the basis of setting and functional sets, they deviate rather uniformly from earlier sites in the valley. They largely lack any evidence of plant-processing tools, and, thus, somewhat resemble hunting camps. However, although projectile points are the predominant tools, they differ significantly in the presence of pottery, which is sometimes abundant. In addition, material density is higher than most sites of either hunting camps or small transient camps. Thus, they do not appear to be oriented toward a fall exploitation of resources. The presence of both male- and female-related tools, the apparent absence of plant processing tools, and the material densities on a par with small seasonal sites would argue for a seasonal occupation probably not occurring in the fall. Althugh there is no direct evidence of seasonality at this time, a subsistence based largely on hunting, the apparent presence of familial units, and the apparent duration of stays at these sites would argue strongly for small winter camps. We cannot yet, however, rule out hunting camps by familial units, although the relative densities of these sites would tend to argue against this.

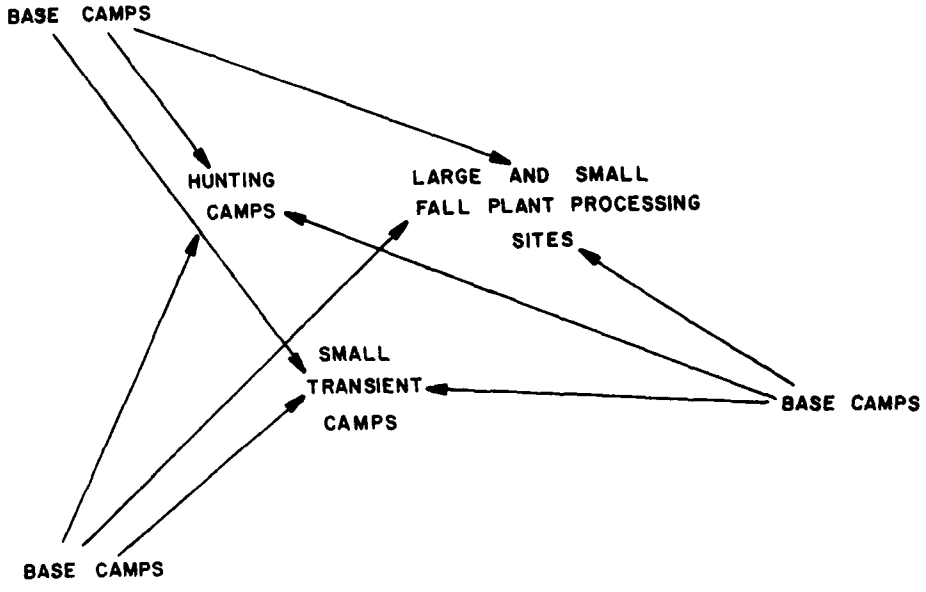

Figure 212. Subsistence-settlement pattern of Early/Middle Archaic through Middle Woodland sites.

Our greatest problem with Late Woodland sites is explaining the distribution of sites. Late Woodland sites are spread throughout the river valley, although they often appear densest as small late components on earlier sites. In fact, very few earlier sites do not contain Late Woodland components. It would seem incongruous to argue that site locations do not drastically change when the types of activities conducted on sites have changed. Thus, earlier hunting camps appear to be more common on the western side of the river valley, but Late Woodland sites, even though subsistence activities are almost entirely hunting, are more common on older plant processing sites on the eastern side of the valley. As floral and faunal resources have not probably differed significantly from preceding periods in entire distributions, an answer, but not the answer, should lie in technological resources.

If the transition from Middle Woodland to Late Woodland was an economic transformation (cf. Plog 1974), then technological changes should have occurred during that period. As the entire subsistence-settlement system appears to have changed (cf. Hunt 1976; Denny 1964), of which the reservoir reflects only a part, then such a transformation appears to have occurred. One of the technological changes which Plog (1974: 137-139) has demonstrated was in point manufacture. This is a reflection of the shift from the use of the atlatl and dart to the bow and arrow. This simplification of manufacture not only required fewer steps but also allowed the use of considerably smaller units of blank material. As hunting appears to be a major activvity, lithic resources (especially chert) would be important in site locations. Earlier sites relied upon using non-local cherts as well as the small amount of local chert available. As the size of usable blank material has decreased with the production of smaller projectile points, it would have been possible to use material from older archaeological sites which up to that point would have been merely wastage. It is thus suggested that sources may have shifted from primary raw material to secondary raw material (i.e., older archaeological sites) and would have thus eliminated another step in projectile point manufacture outlined by Plog (1974: 138).

The climate of the period appears to have been cooler, and Wood (1976: 297) suggests that vegetation reconstructions using General Land Office survey data is likely to be comparable to this period. Graphic representation of the use of the river valley during the Late Woodland is provided in Figure 213.

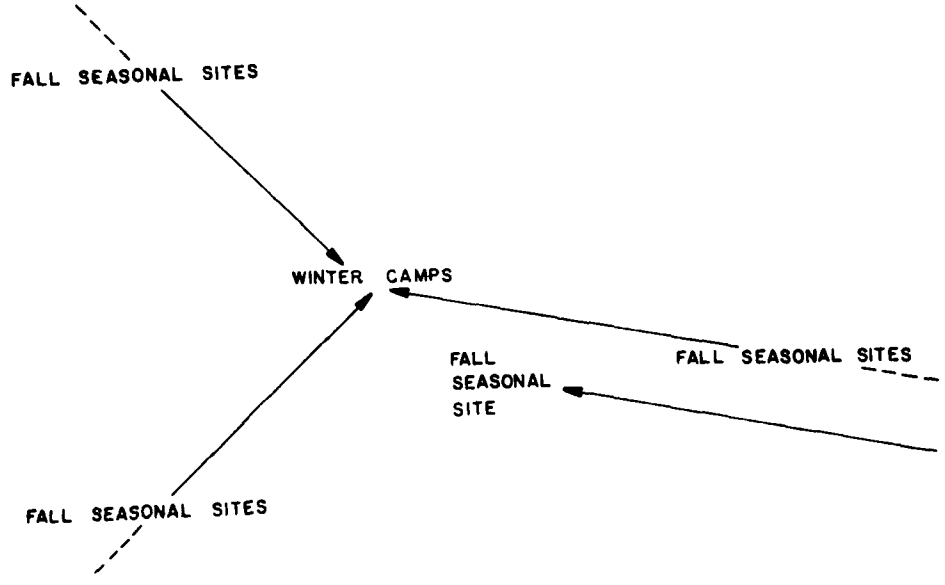

Figure 213. Subsistence-settlement pattern of Late Woodland sites.

Mississippian/Oneota

Sites of this period appear to be hunting camps only. Oneota sites are very small, while the Mississippian component of 23MC65 appears to be somewhat larger. All are, however, characterized by projectile points with neither pottery or any other tools indicated. There is no evidence of the seasonality of these sites. Usage appears to be fairly light and largely confined to the area below the juncture of the East Fork and the Long Branch. Graphic representation is provided in Figure 214.

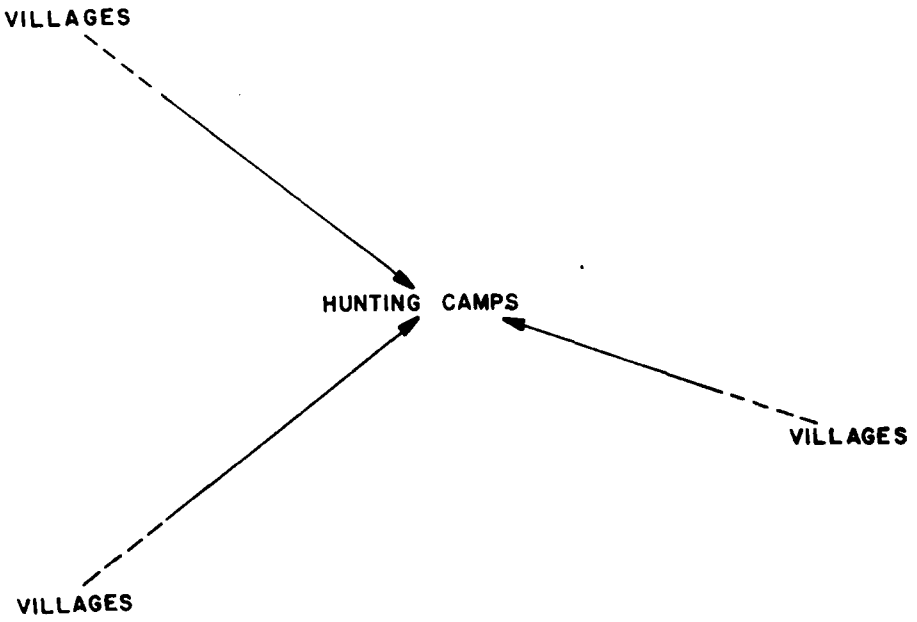

Figure 214. Subsistene-settlement pattern of Mississippian/ Oneota sites.

SUMMARY AND CONCLUSIONS

In the preceding sections, we set forth several very basic research objectives which we would attempt to fulfill in the work in the reservoir. These research objectives included: (1) the formulation of a cultural sequence for the reservoir; (2) to isolate components on sites and determine activity sets; (3) to determine settlement patterns through an examination of geographic and physiographic relationships; (4) the determination of subsistence patterns; (5) to develop subsistence-settlement systems models and examine their changes through time; and (6) to determine the degree of influence and/or occupation of the river valley from the Salt and Chariton River drainage systems.

Results of those analyses indicate that the reservoir was continuously utilized from as early as the Early Archaic period. Sites in the area represent a variety of utilizations of the river valley including small upland hunting camps, small undifferentiated hunting camps, small transient camps, small seasonal sites, and large seasonal sites. The three latter types appear to be interrelated. Activity sets are similar and differ largely in the ratio of hunting tools to plant processing tools. It is suggested that those site types are the result of the variability of most crops and/or other plant crops resulting from meterological variability. This appears to be applicable for the earlier sites from probably the Early Archaic period through the Middle Woodland period, while later sites differ from this. From at least the Middle Archaic (and possibly the Early Archaic) through the Middle Woodland periods, the area exhibits a uniform subsistence-settlement system in which the area utilized most intensively for fall plant products although other types of sites are present. Beginning with or during the Late Woodland period, the subsistence pattern changes appreciably to small seasonal sites which appear to be winter camps. Settlement pattern does not change appreciably, and it is estimated that this is due to an economic transformation in which older archaeological sites become a locus of procurement of primary raw material. The Mississippian/Oneota occupation of the river valley is characterized by only small hunting camps. It is argued that the degree of influence and/or occupation from various directions has changed appreciably through time based on external relationships of artifacts.

Recommendations

As the project is now under full operation and has been active for some time now, it is imperative that the stipulations in the Memorandum of Agreement for Long Branch Lake be actively pursued. The Corps of Engineers should ensure that a management plan for the reservoir be developed as quickly as possible. The management plan should be directed toward an examination of cultural resources in light of present planned developments as well as future developments. Managerial impacts as well as other indirect impacts as outlined in the survey report (Grantham 1977) must be taken into consideration as well.

The stipulations in the Memorandum of Agreement which still need to be fulfilled are:

1. The Corps will develop a management plan for the historic and cultural properties at the project that includes:

    a. an ongoing program of surveying and monitoring on a regularly scheduled basis within those areas to be affected by intermittent inundation and shoreline erosion in order to determine impact on sites. If site impact is observed, shoreline stabilization measures or appropriate mitigative action will be initiated in consultation with the Missouri SHPO.

This must be one of the most important priorities at the present time. Shoreline erosion is stating to become obvious, and erosion will sharpen in the next few years. Sites above but adjacent to the pool level as well as those in the fluctuation area between multipurpose pool and flood pool will become more seriously effected. At the present time, unscientific collection of materials is heavy and may be expected to continue. Shoreline monitoring on a regular basis is necessary now.

    b. nomination of historic and cultural properties at the Long Branch Lake Project to the National Register of Historic Places.

6. In accordance with the National Register Procedures (36 CFR Part 60), the Corps will forward documentation concerning the condition and significance of all eligible sites to the Keeper of the National Register within 2 years following the completion of appropriate mitigative measures at eligible sites so that nomination, boundary changes or eligibility status will be kept current.

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GLOSSARY

Albany slip - A dark brown clay (originally utilized in in potteries in the Albany, New York area) used as a glaze in slip form on American stoneware.

Argillite - A fine-grained, sedimentary stone lacking visible bedding planes. Particle size is smaller than can be observed with the naked eye, but particles are visible under slight magnification.

Branch - A principle tributary of a river comparable in size with the main stem.

Compound fracture - A complicated fracture usually created by inclusions or fracture planes within the material. Multiple fractures are distinguished from compound fractures.

Creek - A principle tributary of a river smaller than a branch and larger than a stream. A creek flows water for most of the year.

Draw - A natural drainage unit smaller than a wash. A draw seldom flows a large amount of water except during heavy runoff. It has a sand and gravel bottom.

Edge - Synonymous with lateral margin. Edge is a term for visual aspect when length and thickness are viewed in the same plane.

End - End is also a term for visual aspect with width and thickness in the same plane.

Face - The third term for visual aspect. Face is the portion of the specimen viewed when length and width are in the same plane.

Fork - A fork is comparable in size with the main stem. They are rivers in their own right, and all join the main stem just prior to their entrance into larger rivers.

Lamellar - Used with regard to flaking pattern, the term refers to parallel flake morphology. It does not indicate parallel flaking pattern.

Longitudinal fracture - A fracture which occurs parallel with the line from the distal to proximal ends.

Gizzard stone - The gizzard is the second stomach of birds (especially seed-eating birds) in which food is ground by the muscle walls. Some of these birds swallow gravel in order to assist with the grinding process. When these stones are passed, the exhibit highly rounded edges and numerous, random fine scratches over the entire specimen. Glass specimens are particularly easy to determine. The quantities of chert waste on archaeological sites often results in chert flakes being utilized as gizzard stones.

Oblique fracture - A fracture from lateral margin to lateral margin which is at an angle between a transverse and a longitudinal fracture.

Plagioclase - A mineral. Plagioclase belongs to the calcium-sodium group of feldspars.

Porcelain - A transluscent, highly vitrified ware which has been fired at a high temperature.

River - The main stem of a drainage unit.

Stoneware - Hard, opaque, vitrified ware between pottery (or earthenware) and porcelain and possessing some of the features of both.

Stream - A stream is a major secondary smaller than a creek and larger than a draw. Streams generally flow water only during periods of extended rainfall and have a sand and gravel bottom. These are the main drainage units between upland ridges.

Stress fracture - A non-percussion fracture resulting from a force to the tool which exceeds the elasticity of the internal material..

Transfer print - Refers to the method where an impression from an engraved metal plate inked with enamel colors is made on a thin piece of paper and transferred to the surface of pottery or porcelain and subsequently melted into the glaze.

Transverse fracture - A fracture running from lateral margin to lateral margin perpendicular to the longitudinal axis.

Two-track - A road for vehicles less frequently used than a lane. There are only two tracks for the tires and grass growing between the tracks.

Wash - A wash is the smallest unit of drainage and is smaller and shallower than a draw. It seldom flows water with sufficient intensity to have resulted in a sand and gravel bottom.